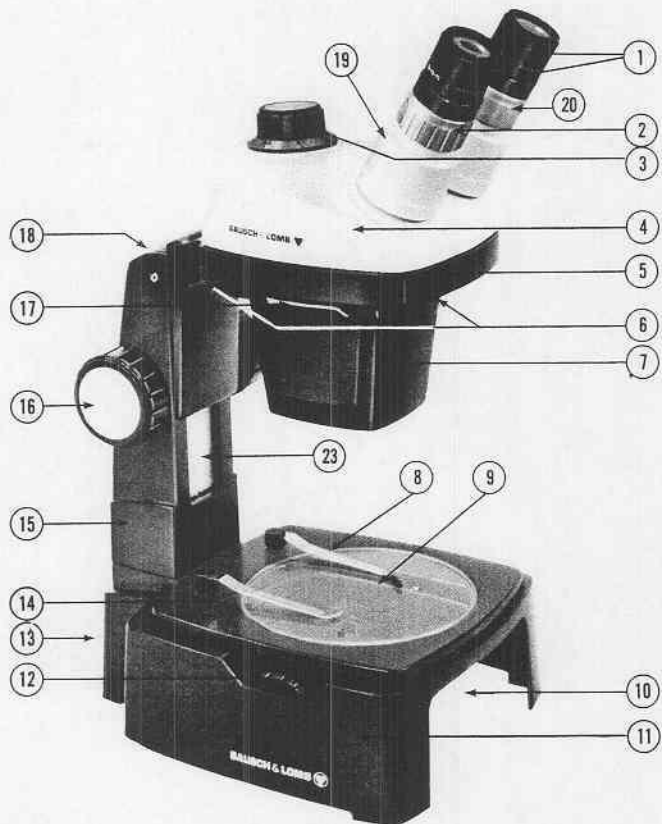

StereoZoom* Series Microscopes

INSTRUCTION MANUAL

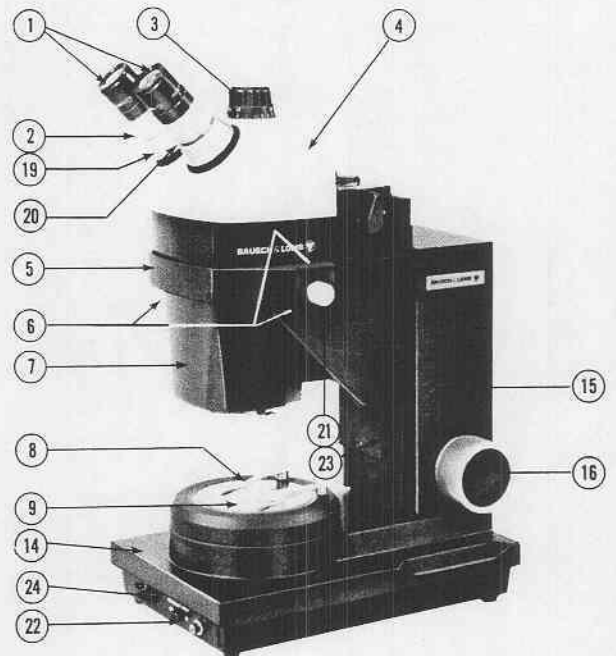
BAUSCH & LOMB 
INSTRUMENTS & SYSTEMS DIVISION

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TELEX 97-8231, CABLE: BAUSCH & LOMB

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**StereoZoom 4 Pod
on a B Stand**



**StereoZoom 7 Pod
on an R Stand**

- | | | |
|----------------------------|------------------------------|---------------------------|
| 1. Eyepieces | 9. Glass Stage Plate | 17. Lock Lever |
| 2. Eyepiece Adjusting Ring | 10. 3-Way Mirror (not shown) | 18. Port Hole (not shown) |
| 3. Magnification Knob | 11. Trans-Illumination Base | 19. Eyepiece Adapter |
| 4. Power Pod | 12. Mirror Axle | 20. Eyepiece Ring |
| 5. Arm | 13. Port Hole (not shown) | 21. Thumbscrew |
| 6. Illuminator Stations | 14. Base | 22. Base Illuminator |
| 7. Objective Cover | 15. Upright | 23. Focusing Slide |
| 8. Spring Clip | 16. Focusing Knob | 24. Thumbwheel |

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Image excellence, rugged construction and exceptional versatility are the hallmarks of the Bausch & Lomb StereoZoom series of stereo microscopes. These features are in keeping with a tradition of quality Bausch & Lomb has maintained for more than 100 years as a microscope manufacturer. The StereoZoom series, introduced by Bausch & Lomb in the 1950's, has become the world standard for stereo microscopes.

Since its introduction, the StereoZoom series has undergone constant improvements and expansion through the development of new models and accessories. Interchangeability between Power Pods, Stands, Eyepieces, Supplementary Lenses and a host of special accessories provides the user with a nearly limitless choice of feature combinations which permit the exact tailoring of the StereoZoom equipment to the requirements of the task.

The StereoZoom series can be used to advantage for nearly any visual task requiring 3-D observation at moderate magnifications. Frequently, the StereoZoom series offers the most economical approach to providing microscope magnification even when there is no requirement for 3-D observation.

Six Power Pods form the nucleus of the StereoZoom series. Two of these are fixed power while four of them provide continuously variable magnification by means of operator controlled zoom systems. Eyepieces and Supplementary Lenses extend the magnification ranges of these Power Pods both upward and downward. All optical elements are sealed into the Power Pods so that all Pods may be interchangeably mounted on any one of the thirteen Stands and Arms offered as part of the StereoZoom series. For viewing convenience, the Pods may be turned 180 degrees for conventional or reversed eyepiece orientation.

Other accessories include a wide choice of illuminators and illumination modes, mechanical stages and stage plates, polarizing accessories, reticles and photographic equipment.

Selection of the right combination of components involves consideration of cost, magnification range, field of view, working distance, eye relief, specimen illumination requirements and convenience of use. With this in mind, descriptive data on the StereoZoom series components are presented in Section 9.0 of this manual both to assist you in interpreting the instructions presented here and to help you more fully utilize the StereoZoom equipment you already have purchased. For more detailed information, send for the latest edition of Bausch & Lomb's StereoZoom Microscope Catalog.

2.0

Safety Precautions

Many of the StereoZoom series microscope equipments are equipped with halogen illuminators. Please note the type with your equipment and follow the WARNING set forth below.

WARNING: The Halogen-Cycle Lamp is pressurized and may shatter. DO NOT operate lamp in excess of rated voltage as this will increase lamp pressure and the risk of shattering. Protect the lamp against abrasions and scratches and against liquids when lamp is operating. Replace *only* with specified replacement lamp.

To guard against personal injury, wear protective glasses and clothing when handling lamp. Turn power off when installing and before removing lamp. Allow lamp to cool before removing. Dispose of lamp with care.

Do not operate in proximity of substance or material that is flammable or adversely affected by heat or drying.

3.0

Unpacking

Each of your StereoZoom series microscopes and accessories have been carefully packaged to insure that they reach you in the best possible condition. Do not discard any packing material or shipping containers until you have assembled your equipment and checked carefully for any small items that may have been overlooked.

Note: Parts and controls referred to in this section can be identified by referring to the photographs and legend preceding Section 1.0 and to Section 8.0.

MOUNTING THE POWER PODS

Power Pods can be mounted on any Stand or Arm, except the R Stands, by simply swinging out the two Lock Levers at either side of the Arm, inserting the Pod so that it faces either forward or backward, and swinging the Lock Levers shut. The fit between Pods and Arms is intentionally snug to prevent movement during use. Therefore, be sure the Pod is fully seated in the Arm.

On R Stands, the Power Pod is retained in the Arm by two Thumb Screws instead of the Lock Levers.

CHANGING STAND WORKING DISTANCE

The Stands have provisions for a wide range of working distances when Supplementary Lenses are added to the Pods. Increased working distance can be accommodated on the A and B Stands by removing the four screws from the underside of the Stand, inserting the 31-27-03 Elevator between the Base and Upright and securing with the four screws supplied with the Elevator.

The R Stands incorporate a built-in provision for variable working distance. To change working distance, remove the four screws which secure the Focusing Slide, reposition the Arm in the desired location and reinstall the four screws. Three positions are available.

MOUNTING THE ILLUMINATORS

All Illuminators for StereoZoom microscopes, except the Coaxial, Ring, Eyepiece and Spot Illuminators, can be mounted in a variety of ways, either free standing or attached to a Power Pod or to a Stand. Refer to the Instruction Manual provided with your Illuminator for specific instructions.

TRANS-ILLUMINATION BASE

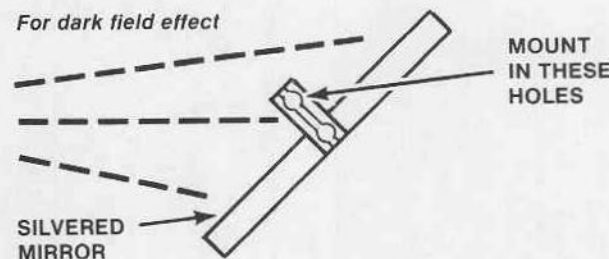
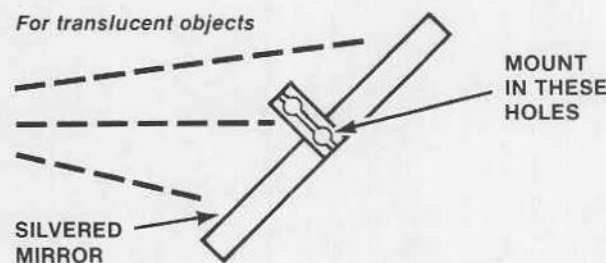
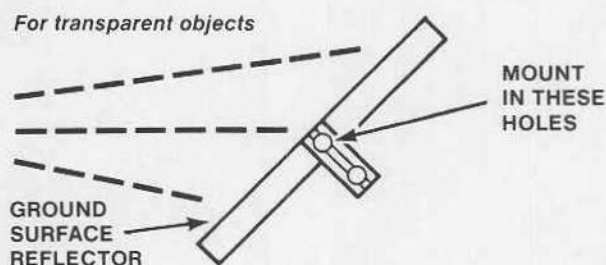
The B Stand for StereoZoom series microscopes is designed for use with both opaque and transparent

specimens. This stand is identical to the A Stand except with the addition of the Trans-Illumination Base, which includes a Clear Glass Stage Plate and a 3-Way Mirror.

The 3-Way Mirror, when used in conjunction with a Nicholas or General Purpose Illuminator inserted in the Port Hole in the rear of the Base, can be used to provide three types of transmitted illumination for the examination of a wide variety of transparent/translucent specimens.

When looking at transparent objects, it is recommended that the ground surface of the 3-Way Mirror be used by placing the Mirror Axles of the Base in the lower pair of Mirror holes. If the object to be examined is translucent, rotate the Mirror to use the reflective surface.

If the specimen is transparent, and a dark field illumination effect is desired, place the Mirror Axles in the upper pair of holes.



These diagrams illustrate the mounting positions for the 3-way mirror.

For the examination of translucent living specimens, the use of the cool, white-light Fluorescent Illuminator is recommended. Refer to the Instruction Manual supplied with this Illuminator for installation instructions.

INTERPUPILLARY DISTANCE ADJUSTMENT

To set the Eyepieces for your proper interpupillary distance, grasp each Eyepiece Adapter while looking into the microscope and move the Eyepieces together or apart until you see the full field of view with both eyes. Check this by closing one eye and then the other without moving your head.

Each observer must adjust the interpupillary distance to their individual requirements and should recheck it each time they use the microscope.

EYEPIECE LOCKING FEATURE OF StereoZoom 5

The StereoZoom 5 Power Pod incorporates an Eyepiece locking feature which lets you lock the Eyepiece directly into the Power Pod while allowing free rotation of the Eyepieces.

First, rotate the inner Eyepiece Lock Ring until the Set Screw lines up with the access hole in the Eyepiece Ring, then insert the hexagonal Wrench (supplied with the Power Pod) into the Set Screw. Insert the Eyepiece completely, making sure that it seats properly on its locating shoulder, and tighten the Set Screw.

Repeat the above procedure for the other Eyepiece.

FOCUSING FIXED POWER PODS

1. Illuminate a flat specimen and then, using the right eye only, look through the right Eyepiece and focus on the specimen turning the Focusing Knob until the image is sharp.
2. Look through the left Eyepiece, and using only the left eye, rotate the Eyepiece Adjusting Ring clockwise or counterclockwise until the image is sharp.

Each observer must focus the microscope to their individual requirements and should recheck it each time they use the microscope.

FOCUSING VARIABLE POWER PODS

1. Set the Magnification Knob to the lowest power, illuminate and center a flat specimen within the field of view. Turn the Focusing Knob until the best image is obtained.
2. Set the Magnification Knob to the highest power and, using only your right eye, adjust the Focusing Knob until the image is sharp. The right Eyepiece is now properly focused.

Note: depth of field decreases as magnification increases. It is many times greater at low power than it is at high power. This means that while it is quicker and easier to bring the specimen into focus at low power, the most critical focus can only be achieved at high power.

3. Reset the Magnification Knob to low power and, using only the left eye, turn the Eyepiece Adjusting Ring until the image is clear and sharp. Make sure the Eyepiece shoulder maintains contact against the Adjusting Ring shoulder. The left Eyepiece is now properly focused.

The microscope will now be properly focused for

both your eyes throughout the magnification range.

Each observer must focus the microscope to their individual requirements and should recheck it each time they use the microscope.

Note: Operators who normally wear glasses with a correction of 2 or more Diopters, and don't wear them when using the microscope may find refocusing necessary when changing magnification.

CHANGING THE MAGNIFICATION OF FIXED POWER PODS

The magnification provided by the Fixed Power Pods may be varied by using different Eyepieces and/or Supplementary Lenses.

$\text{Total Magnification} = \text{Fixed Power} \times \text{Eyepiece Power} \times \text{Supplementary Lens Power}$

CHANGING THE MAGNIFICATION OF VARIABLE POWER PODS

The Variable Power Pods allow you to change the power continuously to exactly the best magnification for a given specimen by simply turning the Magnification Knob located on the top of the Power Pod. The StereoZoom Microscopes allow you to scan an object at a lower power and then concentrate on some particular detail by increasing the power gradually to the desired value.

The power range can be further extended by using different Eyepieces and/or by adding Supplementary Lenses below the Objective.

$\text{Total Magnification} = \text{Variable Power} \times \text{Eyepiece Power} \times \text{Supplementary Lens Power}$

MEASURING PROCEDURE

StereoZoom Microscopes may be used as measuring instruments by inserting a Reticle in one of the Wide Field Eyepieces. A variety of linear and grid patterned Reticles are available for particular applications as well as Stage Micrometers for calibrating the microscope. These are described in Section 9.0.

SELECTING A RETICLE DISC

Select the magnification that will enable you to see the necessary detail and yet cover as much total area of the specimen as is required. Greatest accuracy will result from measurements made within the central $\frac{2}{3}$ of the field of view in a north-south direction. After the magnification has been selected the appropriate reticle disc should then be selected. First, decide what unit you desire to measure the specimen by, then use the following formula to determine what reticle will provide that unit:

$$S \times M = K$$

S = Dimension each division is to equal in the specimen plane.

M = Magnification of the Power Pod only.

K = Actual dimension of each smallest division on the reticle.

Example: Desired dimension on specimen, $S = .002''$
 Magnification of Power Pod, $M = 2X$
 Actual dimension of division on reticle (equal to $.002''$ on the specimen) would be $K = .004''$ (approximately 0.1mm).

INSERTING THE RETICLE DISC

Caution

Before installing a Reticle be sure it is free of dust, lint, smears, etc. To clean the Reticle wipe its surfaces with a cotton pad moistened with a mild soap. Rinse and dry without pressure using a soft lintless cloth.

1. Remove the black cylindrical Field Diaphragm by unscrewing it from inside the smaller diameter end of the Eyepiece (refer to the Assembly Views on page 8.14).
2. Place the Reticle into the thin metal rim on top of the Field Diaphragm so that the scale will face towards the inside of the Field Diaphragm.
3. The thin metal rim will extend beyond the surface of the glass. Using a pencil with eraser, or thumbnail or similar object, press against the outside of the rim to force it inward and downward against the Reticle. If the Reticle is to be temporarily installed, bend in the metal rim at three points around the glass. If the Reticle is to be permanently installed, do this at three points around the circumference and then bend the rim over the Reticle around the whole circumference by holding the mount at a 45° angle and rolling it on a hard surface such as a table top.
4. Replace the Field Diaphragm and Reticle assembly by screwing it in until the scale comes into sharp focus when viewed through the Eyepiece.
5. To remove the Reticle, press against the scale side of the Reticle and push it out of its mount.

CALIBRATING THE RETICLE

After the correct Reticle has been selected it must be calibrated. If the Reticle is to be calibrated in inches a 31-16-89 or 31-16-87 Stage Micrometer should be used. If the Reticle is to be calibrated in millimeters a 31-16-90 or 31-16-99 Stage Micrometer should be used.

For the most accurate calibration and measurements, the Reticle and the Stage Micrometer both should be positioned in the north-south direction.

The Reticle must be calibrated for each objective power that it is used with and must also be calibrated for each StereoZoom microscope that it is used with.

1. It is recommended that the Eyepiece containing the Reticle be placed in the right Eyepiece Adapter.
2. Place the appropriate Stage Micrometer on the Microscope Stage Plate.
3. Focus carefully so that you see the Stage Micrometer scale sharply in focus at the same time as the Reticle scale is sharply in focus.
4. Align the Reticle scale with the Stage Micrometer scale so that they may be compared.
5. Read the number of scale intervals "b" on the Stage Micrometer which correspond to the number of intervals "a" on the Reticle. One interval of the Reticle then corresponds to b/a intervals of the Stage

Micrometer. Compute this ratio and use it to make measurements in the specimen plane.

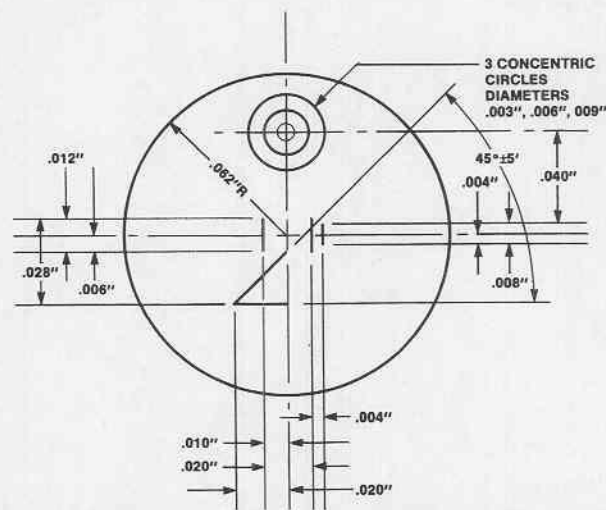
SPECIAL RETICLES

Often industrial or experimental applications require special custom made scales such as a Reticle that could be used as a "GO - NO GO" gauge.

For a quotation on special reticles to your specifications write:

Bausch & Lomb
 Dept. 7615
 820 Linden Avenue
 Rochester, NY 14625

In your request state the objective magnification you prefer to work with and the model of Wide Field Eyepieces in which the reticle will be placed. An accurate drawing of the pattern you need, fully dimensioned, must be submitted. The example below illustrates the kinds of dimensions required.



TYPICAL PATTERN FOR RULING RETICLE DISC

INSTALLATION OF SUPPLEMENTARY LENSES

Until you are familiar with the installation procedure it is recommended that you first remove the Power Pod from its Stand and remove the Eyepieces, turn the Power Pod upside down and install the Supplementary Lens as noted below, then insert the Power Pod back in its Stand and replace the Eyepieces.

Once you have become familiar with the procedure, the Supplementary Lens may easily be installed without removing the Power Pod from the Stand.

Stereo 1 & 2 StereoZoom 3, 4 & 5

Cat. No.	Working Distance
31-99-14 0.3X Supplementary Lens	276mm (10 1/2'')
31-26-18 0.5X Supplementary Lens	178mm (7'')
31-26-19 2.0X Supplementary Lens	38mm (1 1/2'')

To mount one of these Supplementary Lenses, simply screw it into the large diameter thread located on the bottom of the Power Pod housing. Make sure it is threaded securely against the shoulder.

NOTE: If the threads start to seize-up during installation, apply a *very small* amount of oil to the Lens thread, wipe away the excess and reassemble.

The 0.3X and 0.5X Lenses are restricted to use on those Stands where the working distance is attainable as on K, KT, S or SK, or the A and B Stands when used in conjunction with the 31-27-03 Elevator.

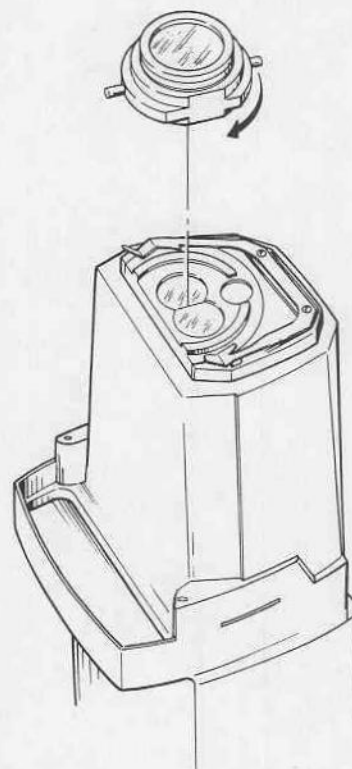
StereoZoom 7

Cat. No.		Working Distance
31-27-08	0.25X Supplementary Lens	266mm (10½")
31-27-04	0.5X Supplementary Lens	127mm (5")
31-27-05	1.5X Supplementary Lens	32mm (1¼")
31-27-06	2.0X Supplementary Lens	14mm (9/16")

CAUTION

When installing or removing a Supplementary Lens, be careful that its pins do not scratch the objective lenses in the Power Pod.

1. Position the Supplementary Lens so that the longer pin projects perpendicular to the flat face of the Power Pod as shown below.



2. Seat the Supplementary Lens in the shallow semicircular recess in the Power Pod and rotate it clockwise 90° until it clicks into position. Check to see that it is properly mounted and make sure that the flat side of the Supplementary Lens is aligned with the flat face of the Power Pod.
3. To remove the Supplementary Lens, rotate it counterclockwise 90° and then remove it carefully from the Power Pod.

PROTECTING THE MICROSCOPE AND ACCESSORIES

The primary rule to follow with respect to proper care of microscopes and accessories is to keep them as free from dust and dirt as possible. Dust, fingerprints or a smear on the optics will degrade the image. When the equipment is not in use, cover it with a plastic cover.

CLEANING THE OPTICS

The Power Pods have been factory aligned, cleaned and sealed. DO NOT attempt to disassemble them. Within each Eyepiece Adapter is a glass dust cover. The Eyepieces should be kept in place to prevent dust from settling on these covers. However, if dust does accumulate, it can be removed by unscrewing the Eyepiece Adapter and wiping the dust cover with a soft clean cloth. If the dust is gritty, it should be blown off with an air syringe or wiped off with a cloth or cotton swab moistened with soap and water or alcohol followed by a thorough wiping with a dry cotton swab.

CAUTION

Avoid excessive use of solvents, as flowing solvents may cause cement run-in on cemented optics, making cleaning a tedious job.

ADJUSTING FOCUS TENSION ON ARMS AND STANDS

Both Arms and all Stands except the R, S and SK Stands have two hex socket-head Gib Screw B's which can be used to adjust the tension of the focusing mechanism. By turning these screws slightly clockwise or counterclockwise, the tension can be increased or decreased. When making this adjustment, be sure to adjust the screws in the same direction and about the same amount.

Each R Stand is factory adjusted to establish the proper balance between the tension of the focusing mechanism and the load carrying capacity. After considerable use, a slight readjustment may be needed. To increase the focusing tension, tighten the hex socket-head screw in the center of the left Focusing Knob about 1/12 of a turn clockwise using a 7/64-inch hex wrench. To decrease the tension, loosen the screw about 1/2 turn counterclockwise and pull the left knob outward to reduce the tension. Then tighten the screw gradually until the desired tension is established.

LUBRICATION

Power Pods and R Stands are permanently lubricated at the factory and generally do not require periodic

lubrication. If cleaning and relubrication become necessary as a result of abnormal use or exposure to unusually harsh environments, the equipment should be returned to the factory or serviced by qualified maintenance personnel.

The Focusing Slide on all stands other than R stands should be wiped clean occasionally, using a solvent such as Xylol or alcohol, and relubricated with a light coating of grease. Alvania #2 grease, which is available at Shell service stations, is recommended for this purpose.

SERVICE

All optical, electrical and mechanical equipment requires periodic servicing to keep it performing properly and to compensate for normal wear.

Establishing a schedule of regular preventive maintenance will help to assure long life and sustained optimum performance for your instrument. It will also help to avoid unexpected trouble and the necessity of having the instrument serviced at inconvenient times.

A program of planned preventive maintenance, involving a thorough cleaning, checking and adjustment of mechanisms is recommended for all instruments.

This work should be performed by qualified personnel with the proper training and equipment. Your authorized B&L dealer, or Bausch & Lomb, can arrange this service.

IMPORTANT

If unexpected trouble is experienced with your instrument, contact your Bausch & Lomb dealer. He may be able to suggest simple remedies to correct the apparent difficulty without your having to send the instrument out for servicing.

Should it become necessary to send your instrument out for service:

Please pack the instrument carefully in a crush resistant carton with at least three inches of shock absorbing, dustless material surrounding it to prevent transit damage. Saving the original carton in which your instrument is received will prove helpful for this purpose. If a suitable carton is not available, one may be ordered from the factory at nominal cost.

Include a detailed letter in the shipping carton, preferably fastened to the instrument, describing the trouble experienced. This information will enable the service technician to effect required repairs promptly and at least expense.

ILLUMINATING THE SPECIMEN

The full potential of your stereomicroscope can be realized only if the microscope is equipped with the right kind of illumination system. Equally important considerations are operator comfort and efficiency, which also depend upon specimen illumination.

Providing optimum illumination is complicated by the great variety of specimens which are examined under stereomicroscopes and by the very nature of stereomicroscope design. A StereoZoom microscope embodies two separate and complete microscope systems mounted at different viewing angles with respect to the specimen, and optimum viewing requires a critical balance between the illumination supplied to the two microscope systems.

No single Illuminator is capable of satisfying the requirements for all kinds of specimens. For this reason Bausch & Lomb offers a number of different Illuminators. Each Illuminator is suitable for a variety of specimen types, but usually there is a "best" Illuminator for each specimen. Following are some general suggestions for Illuminator selection; however, it may be necessary to do a little experimenting before the optimum solution is reached for some particularly difficult specimens.

TRANSPARENT AND TRANSLUCENT SPECIMENS

For these specimens a properly equipped B or R Stand is recommended. The R Stands are available in five models, two of which have built-in Base Illuminators and Transformers and no additional equipment is required. The R Stands are especially recommended for photomicrography with the StereoZoom 7 Power Pod.

The Fluorescent Illuminator is recommended for use with the B Stand when highly diffuse illumination is required (not suitable for color photomicrography). For more intense directional illumination, the B Stand with its built-in 3-Way Mirror and an attached Nicholas or General Purpose Illuminator is recommended. The focus feature of the General Purpose Illuminator makes it the better choice. Care should be exercised with both Illuminators to align both the Reflector and the Illuminator so that balanced illumination is provided for both halves of the microscope. For completely transparent specimens, the diffuse side of the Reflector should face the Illuminator because full aperture illumination cannot be achieved with the mirror side at low magnification levels.

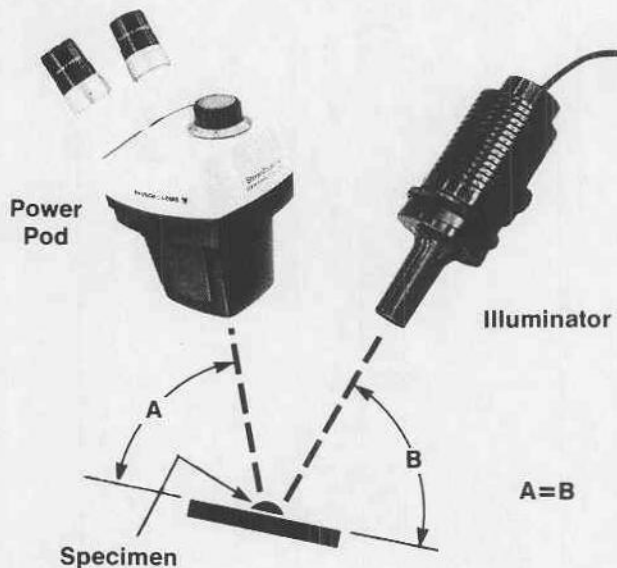
DIFFUSE OPAQUE SPECIMENS

In general, any Illuminator will make this kind of non-reflective specimen visible in the microscope; however, the choice of Illuminators will have a profound effect on the visibility of specimen detail. Contours can be made visible by the shadows cast when the specimen is illuminated from one side only and at a large angle of incidence. Changing the Illuminator position will enhance some details while suppressing others. When desirable, shadows can be eliminated completely by the simultaneous use of two or more Illuminators or by using

an omni-directional source such as the Ring Illuminator. The Ring, General Purpose and Reflector Illuminators are recommended for use on large objects such as minerals, coins, electronic and mechanical components, gems and powders and for dissecting and other work involving the manipulation of tools under the microscope.

SPECULAR SPECIMENS

Bright field illumination of specular (highly reflective) surfaces demands that the optical Law of Reflection be taken into account. The axis of the Illuminator must be positioned so that after reflection from the specimen surface, the direction of the image-forming rays will coincide with the axes of the microscope. This condition can be fulfilled by tipping the specimen and orienting the Illuminator as illustrated below.



The out-of-focus condition of large areas of the specimen image which results from this method of illumination can be avoided completely on Stereo 1 & 2 or StereoZoom 3, 4 & 5 Power Pods by use of a Spot Illuminator or a Vertical Illumination Attachment. A StereoZoom 7 Pod equipped with a Coaxial Illuminator will also eliminate this problem.

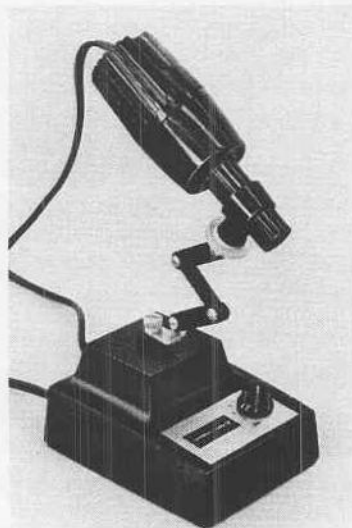
The Coaxial illumination system used in conjunction with the StereoZoom 7 Power Pod is applicable to nearly all kinds of specular specimens, with the images of polished specimens appearing exactly the same as when viewed through a metallograph or metallurgical microscope.

Somewhat less effective illumination for specular specimens may be attained with all StereoZoom series microscopes by adding a Vertical Illumination Attachment to the Power Pod and by employing either a General Purpose, Nicholas or Reflector Illuminator

attached to the Stand or Power Pod. This can also be achieved by using a Spot Illuminator on a Stereo 1 or 2, or StereoZoom 3, 4 or 5 Power Pod. A StereoZoom microscope equipped for vertical illumination is shown on page 7.3.

CAVITIES

Special illuminators are generally required when viewing any kind of opaque or translucent surface located on the side or at the bottom of a deep cavity. The Spot Illuminators are designed primarily for cavity illumination or wherever a compact vertical illuminator is required. They can be used on all Power Pods except the StereoZoom 7. Three models are available, each being



NICHOLAS ILLUMINATOR



GENERAL PURPOSE ILLUMINATOR

GENERAL PURPOSE ILLUMINATOR WITH IRIS DIAPHRAGM, NICHOLAS ATTACHMENT AND FILTER HOLDER



GENERAL PURPOSE ILLUMINATOR WITH IRIS DIAPHRAGM



GENERAL PURPOSE ILLUMINATOR WITH IRIS DIAPHRAGM AND FILTER HOLDER



designed for a particular working distance and magnification factor as described on page 7.2.

The Vertical Illumination Attachment combined with either the Nicholas or General Purpose Illuminator is another solution. The Vertical Illumination Attachment work with all StereoZoom Pods.

ILLUMINATORS

There are eight types of illuminators which may be used with StereoZoom microscopes.

Nicholas Illuminator
General Purpose Illuminator
Fluorescent Illuminator
Reflector Illuminator
Ring Illuminator
Spot Illuminators
Coaxial Illuminator
Eyepiece Illuminator

The type of illuminator chosen is determined by the type of specimen, the area of the specimen which must be illuminated and the intensity of the desired illumination. Whenever possible, mount the illuminator the microscope so that the illumination stays centered the microscope is focused on specimens of different thickness.

NICHOLAS ILLUMINATOR provides a directional concentrated beam of relatively high intensity light. It can be supplied with an adjustable Linkage and a three-step variable Transformer. The Nicholas Illuminator may be mounted in the hole in the arm of the A Stand, in the Stationary Arm, or in the hole at the rear of the Base. It may also be mounted to the Linkage which may be attached to either of the two holes in the Power Pod or R Stand, or fastened directly to the threaded hole in the top of the Transformer and used as a movable source to bring light in from any direction. In its various positions, it can be used to examine opaque-diffuse materials, translucent materials, and transparent materials.

GENERAL PURPOSE ILLUMINATOR provides an inter spot of light which is concentrated in a relatively small field and focusable from three inches to infinity.

It can be supplied with a 3-step, variable Transformer and an adjustable Linkage. When equipped with a Linkage, the General Purpose Illuminator may be mounted directly to the StereoZoom Power Pod or R Stand, or to the Transformer. Four accessories have been designed for use with the General Purpose Illuminator:

1. The adjustable Iris Diaphragm is an aperture control which regulates brightness. Used with the Nicholas Attachment, it is a field diaphragm which regulates size of the spot of light.
2. The Filter Holder holds two-inch round or square filters and can be attached to the basic illuminator, Iris Diaphragm, or the Nicholas Attachment.
3. The Nicholas Attachment contains a focusable telephoto type projection lens system which can image the field diaphragm from six inches to infinity can be used with or without the Iris Diaphragm and the Filter Holder.

4. The Cone Adapter attaches to the illuminator housing or the Iris Diaphragm permitting the illuminator to be mounted in the E Arm, A stand, B Base or the Nicholas Adapter on an ER Arm.

FLUORESCENT ILLUMINATOR provides a cool diffuse light of daylight character.

When it is mounted in the base of the B stand, it may be used to examine transparent specimens. When it is mounted on the Linkage, it may be used to examine opaque materials. It is especially effective where surfaces are highly reflective. The Fluorescent Illuminator is particularly useful for examining live specimens because its light is cool.

REFLECTOR ILLUMINATOR gives moderately directional lighting of a fairly high intensity. It illuminates a general area. It is a versatile illuminator and can be used with opaque-diffuse materials and translucent materials.

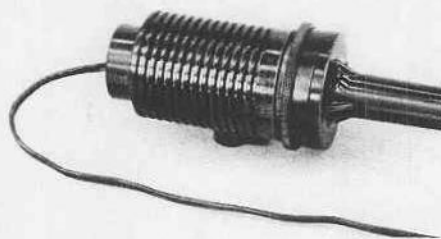
RING ILLUMINATOR The source is a dual concentric ring fluorescent tube providing cold light of daylight quality. The lamp is mounted on a StereoZoom Power Pod by means of a coupler and on the StereoZoom 7 by means of a converter and coupler.

Use in conjunction with the B&L Coaxial Illuminator System results in very effective shadowless illumination of the specimen.

SPOT ILLUMINATORS are available in three models to provide vertical illumination for all StereoZoom series Power Pods except the StereoZoom 7.

The three models offer a range of working distance from 3" to 10" with magnification factors of 1.0X, 0.5X and 0.3X to provide vertical illumination for the examination of P. C. boards, cracks, crevices and holes up to a depth of 10". These compact illuminators attach to the bottom of the Power Pods by means of a threaded adapter and provide an uncluttered work space above and around the specimen.

COAXIAL ILLUMINATOR for StereoZoom 7 only is an ideal illuminator for viewing flat, highly reflective specimens, and is a compact unit which allows complete flexibility of the StereoZoom 7 Microscope. It is equipped with green, yellow, and daylight blue filters in a unique rotating turret. The easily changed lamp is powered by a three-tap Transformer. The Coaxial Illuminator must be installed to the StereoZoom 7 Power Pod at the factory.



**GENERAL
PURPOSE
ILLUMINATOR
WITH CONE
ADAPTER**



**FLUORESCENT
ILLUMINATOR**



REFLECTOR ILLUMINATOR



RING ILLUMINATOR



SPOT ILLUMINATOR



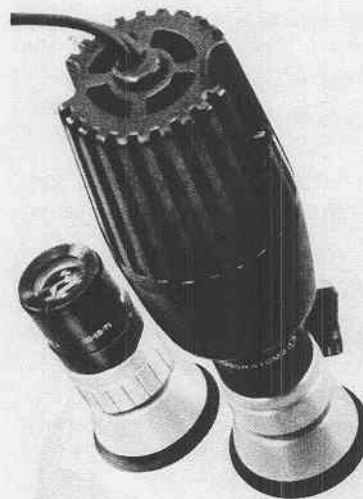
COAXIAL ILLUMINATOR

EYEPIECE ILLUMINATOR—designed primarily for use with the StereoZoom 7 Power Pod when equipped with a photomicrographic system or viewing screen. It provides the same efficient illumination as a Coaxial Illuminator for precise examinations of multilayer, flat, and opaque objects in semiconductor and electronics applications. Includes a built-in filter holder for accepting any of several available 13/16" diameter filters.

VERTICAL ILLUMINATION ATTACHMENT

If straight top lighting is necessary to bring out surface detail, one of the external illuminators already mentioned may be used in combination with the Vertical Illumination Attachment. This Attachment has no light source of its own. Instead, it has a mirror system which reflects light directly downward on the specimen.

The Vertical Illumination Attachment is especially useful for examining interior surfaces of castings or machined parts, cracks, holes and crevices. The Vertical Illuminator Adapter is attached to the bottom of the Power Pod in the same manner as a Supplementary Attachment Lens, oriented as necessary and clamped in place by a thumb screw.



EYEPIECE ILLUMINATOR

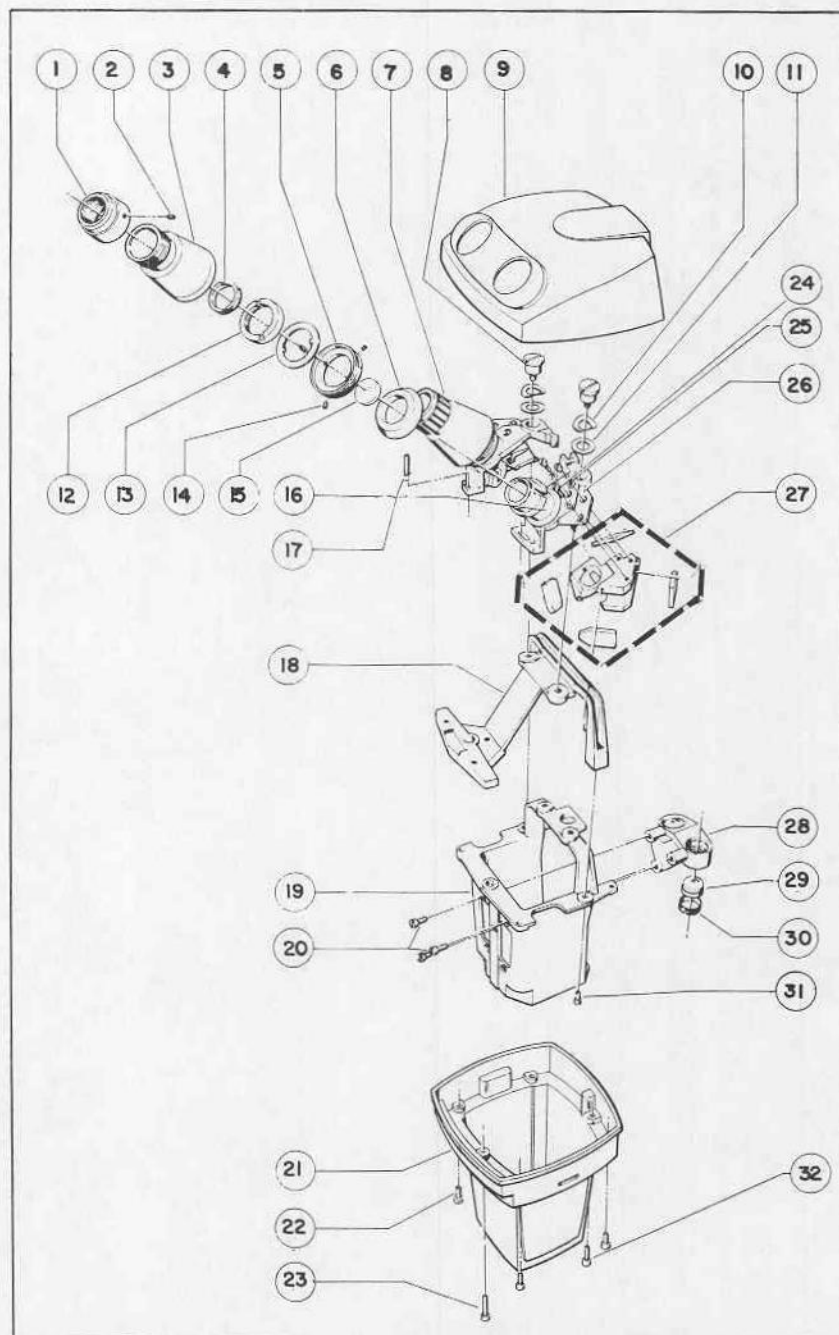


**VERTICAL ILLUMINATION
ATTACHMENT WITH
GENERAL PURPOSE
ILLUMINATOR**

STEREO 1

1.0X Fixed Power Pod,

Cat. No. 31-26-91



Key	Description	Part No.
1	Eyepiece Ring	312694-175
2	2-64T x 1/16 Set Screw	312701-379N
3	Eyepiece Adapter	312694-369
4	Ret. Ring	312694-321
5	Dust Seal Cap	312694-259
6	Dust Seal	312740-129
7	Eyepiece Adj. Ring	312694-129
8	Pivot Screw A	312694-144
9	Mirror Housing	312691-126
10	F-309 Washer	90008-377
11	F-108 Washer	90008-281
12	Adapter	312694-269
13	Dust Seal Washer	312694-234
14	4-48 x 1/4 Set Screw	315153-120N
15	Dust Cover	312694-052
16	Body Tube	312694-277
17	Pin	312799-171
18	Eyepiece Mount Support	312799-102
19	Housing	312692-105
20	8-32G10S Screw	96208-0808
21	Objective Cover	312694-370
22	6-32 x 5/16 lg Screw	316012-150
23	6-40 x 2 9/32 lg Screw	312694-125
24	4-48 x 3/16 Screw	312694-326N
25	F-120 Washer	90008-125
26	Eyepiece Mount Right	312799-116
	Eyepiece Mount Left	312799-115
	(not exploded)	
*27	Mirror Mount Right Assy	312694-376
	Mirror Mount Left Assy	312694-375
	(not exploded)	
28	Lens Mount	312691-101
29	Lens AB Assy	312691-023
30	Retainer Ring	423496-106
31	8-36 x 9/32 Screw	312694-327N
32	6-40T x 3/8 Screw	312694-324N

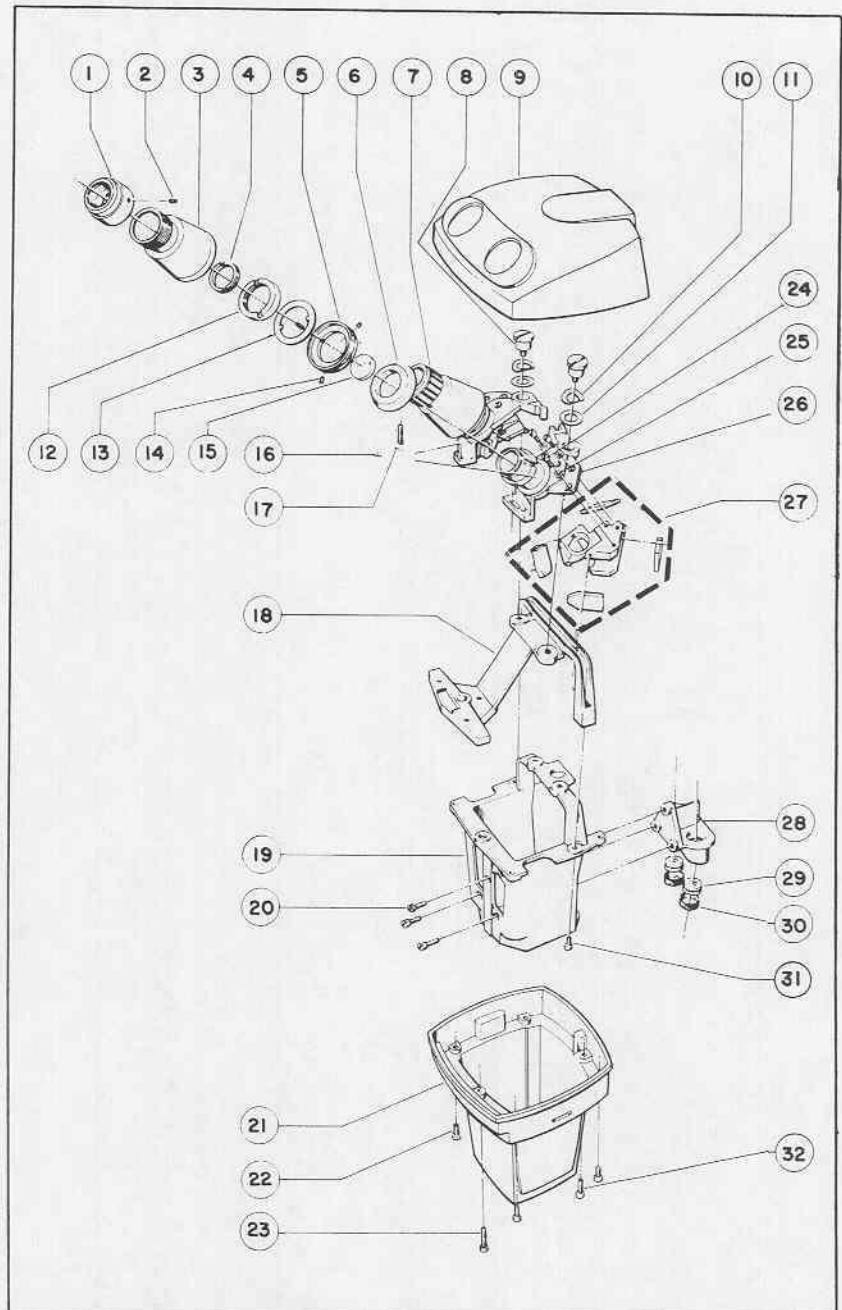
*Sold in assembled units only.

Stereo 2

2.0X Fixed Power Pod, Cat. No. 31-26-92

Key	Description	Part No.
1	Eyepiece Ring	312694-175
2	2-64T x 1/16 Set Screw	312701-379ND
3	Eyepiece Adapter	312694-369
4	Ret. Ring	312694-321
5	Dust Seal Cap	312694-259
6	Dust Seal	312740-129
7	Eyepiece Adj. Ring	312694-129
8	Pivot Screw A	312694-144
9	Mirror Housing	312692-123
10	F-309 Washer	90008-377
11	F-108 Washer	90008-281
12	Adapter	312694-269
13	Dust Seal Washer	312694-234
14	4-48 x 1/4 Set Screw	315153-120ND
15	Dust Cover	312694-052
16	Body Tube	312694-277
17	Pin	312799-171
18	Eyepiece Mount Support	312799-102
19	Housing	312692-105
20	8-32G10S Screw	96208-0808
21	Objective Cover	312694-370
22	6-32 x 1/16 lg Screw	316012-150
23	6-40 x 29/32 lg Screw	312694-325ND
24	4-48 x 3/16 Screw	312694-326ND
25	F-120 Washer	90008-125
26	Eyepiece Mount Right	312799-116
	Eyepiece Mount Left	
	(not exploded)	
*27	Mirror Mount Right	312694-374
	Mirror Mount Left	
	(not exploded)	
28	Lens Mount	312692-101
29	Lens AB Assy	312692-023
30	Retainer	312692-102
31	8-36 x 1/2 Screw	312694-327ND
32	6-40T x 3/8 Screw	312694-324ND

*Sold in assembled units only.



StereoZoom 3

1.0X thru 2.5X Variable Power Pod, Cat. No. 31-26-93

StereoZoom 4

0.7X thru 3.0X Variable Power Pod, Cat. No. 31-26-94

Key	Description	Part No.
STEREOZOOM 4		
1	Eyepiece Ring	312694-175
2	2-64T x 1/16 Set Screw	312701-379ND
3	Eyepiece Adapter	312694-369
4	Dust Seal Cap	312694-259
5	4-48 Set Screw	315153-120ND
6	Dust Cover	312694-052
7	Dust Seal	312740-129
8	Eyepiece Adj. Ring	312694-129
9	Mirror Housing	312694-367
10	Ret. Ring	312694-321
11	Adapter	312694-269
12	Dust Seal Washer	312694-234
13	Spring Pin	312799-171ND
*14	Body Tube—must be assembled with key 43	312694-277
*15	Mirror Mount Right Assy	312694-376
	Mirror Mount Left Assy (not exploded)	312694-375
18	Eyepiece Mount Support	312799-102
19	Tru-Arc Ret. 5133-25	312695-111ND
20	F-310 Spring Washer	90008-378
21	Screw, 6-32 x 3/8	312694-329ND
22	Bearing Screw (4)	312694-118
23	F-306 Washer	90008-369
24	Lock Nut	312694-322
25	Gear Drive Support	312799-107
26	Ball .1562 Ø (4)	312694-152ND
27	Lead Screw Mount	312799-265
28	6-40 x 3/8 Screw	312694-328ND
29	F-306 Washer	90008-369
30	Lens E-F Assy	312694-029
31	Retainer	312692-102
32	E-F Lens Mount	312799-256
33	2-56 x 3/16 Screw (2)	312694-302ND
34	Retainer	312692-102
35	Cover Gasket	312694-312
36	6-40 x 29/32 Screw	312694-325ND
37	6-32 x 3/32 Screw	316012-150
38	Pivot Screw "A"	312694-144
39	F-309 Washer	90008-377
40	F-108 Washer	90008-281
41	Screw, 4-48 x 3/16	312694-326ND
42	F-120	90008-125
*43	EP Mount Right (refer to key 14)	312799-116
*	EP Mount Left (not exploded)	312799-115
47	Mount AB	312799-272
48	Objective Driven Gear 2	312694-121
49	Gear Lock Nut	312694-169
50	Cell Mount B & Pad Assy	312694-351
52	AB Lens Assy	312694-023
53	Magnification Knob Assy	312694-366
54	Washer F-304	90008-367
55	Set Screw	312694-236ND

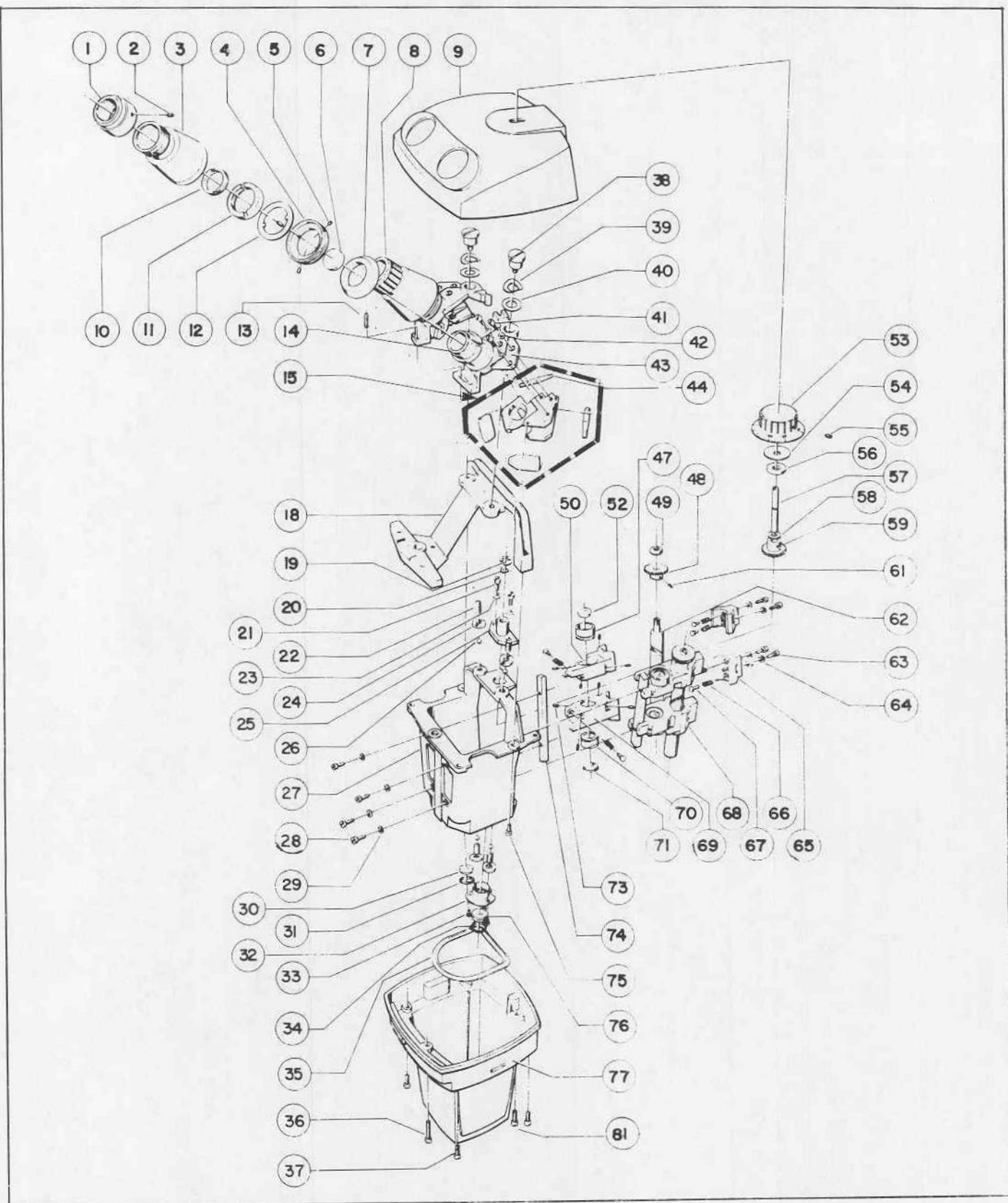
Key	Description	Part No.
56	Washer	312694-141
*57	Drive Gear Shaft	312694-139
*58	F-305 Washer	90008-368
*59	Objective Drive Gear	312694-120
61	Set Screw	312694-229ND
62	Lead Screw & Gear Assy L.H.	312694-201
	Lead Screw & Gear Assy R.H. (not exploded)	312694-266
63	2-56 x .312 LG Screw	312694-292ND
64	F-119 Washer	90008-124
	F-132 Washer (not shown)	90008-142
65	Cover	312799-178
66	Cover Spring	312694-372
67	Pad "B"	312694-105
68	Objective Mount Cover	312799-178
69	Cell Mount A Pad Assy	312694-348
70	Lens CD Mount	312799-274
71	Cd Lens Assy	312694-037
73	2-64 x 7/32 lg Spline Set Screw (8)	312694-310ND
74	Guide Bar	312694-106
75	Screw, 8-36 x 9/32	312694-327ND
76	Lens E-F Assy	312694-029
77	Objective Cover	312694-370
78	Objective Driven Gear RH	312694-264
81	6-40 x 3/8 Screw	312694-324ND

STEREOZOOM 3

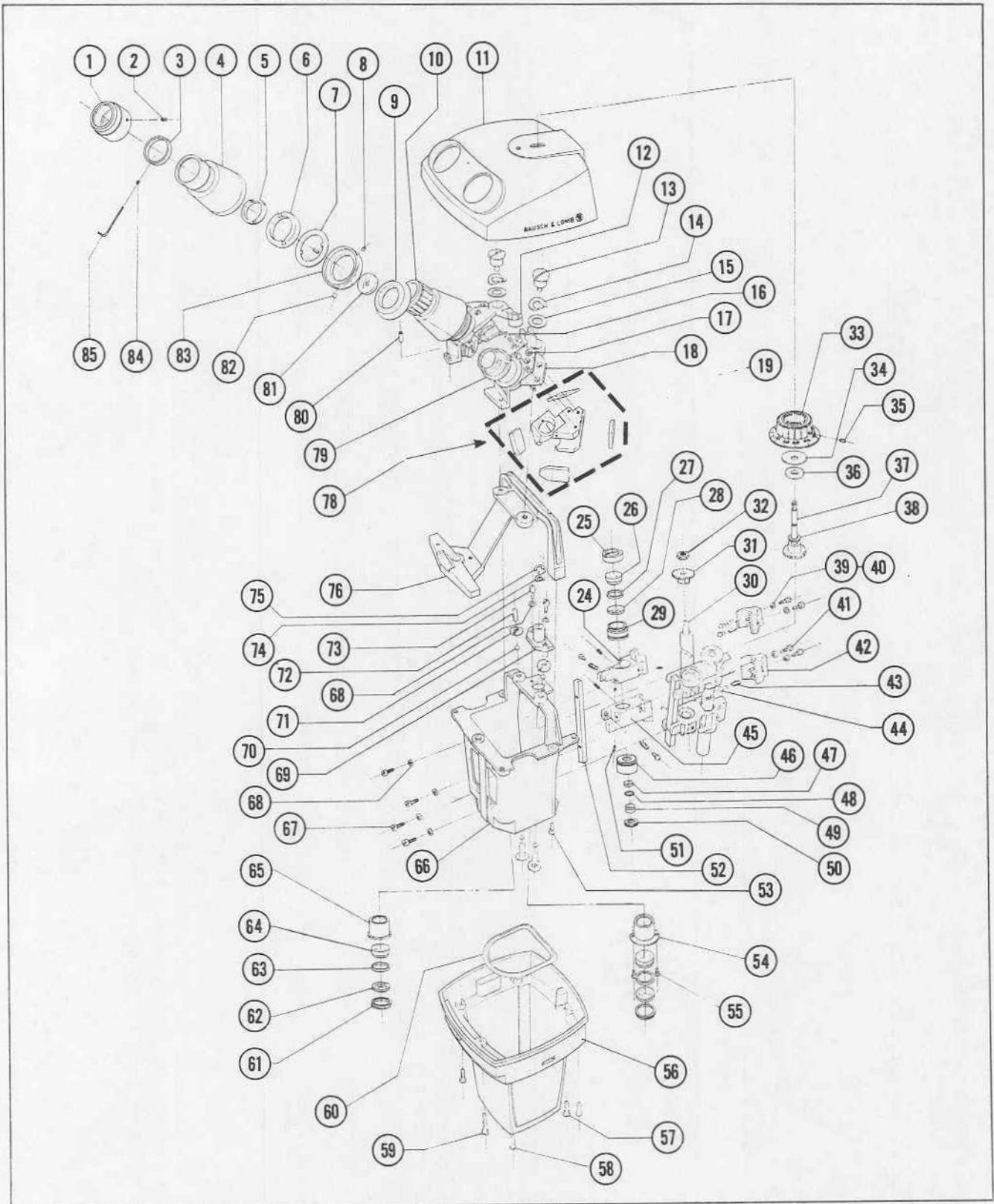
All parts are similar to those for the 31-26-94 Power Pod except:

9	Mirror Housing	312693-141
53	Magnification Knob Assy	312693-140
*57	Drive Gear & Shaft Assy	312693-132
*58		
*59		
*60		

*Sold in Assembled Units Only



StereoZoom 5 **0.8X thru 4.0X Variable Power Pod,** **Cat. No. 31-27-40**

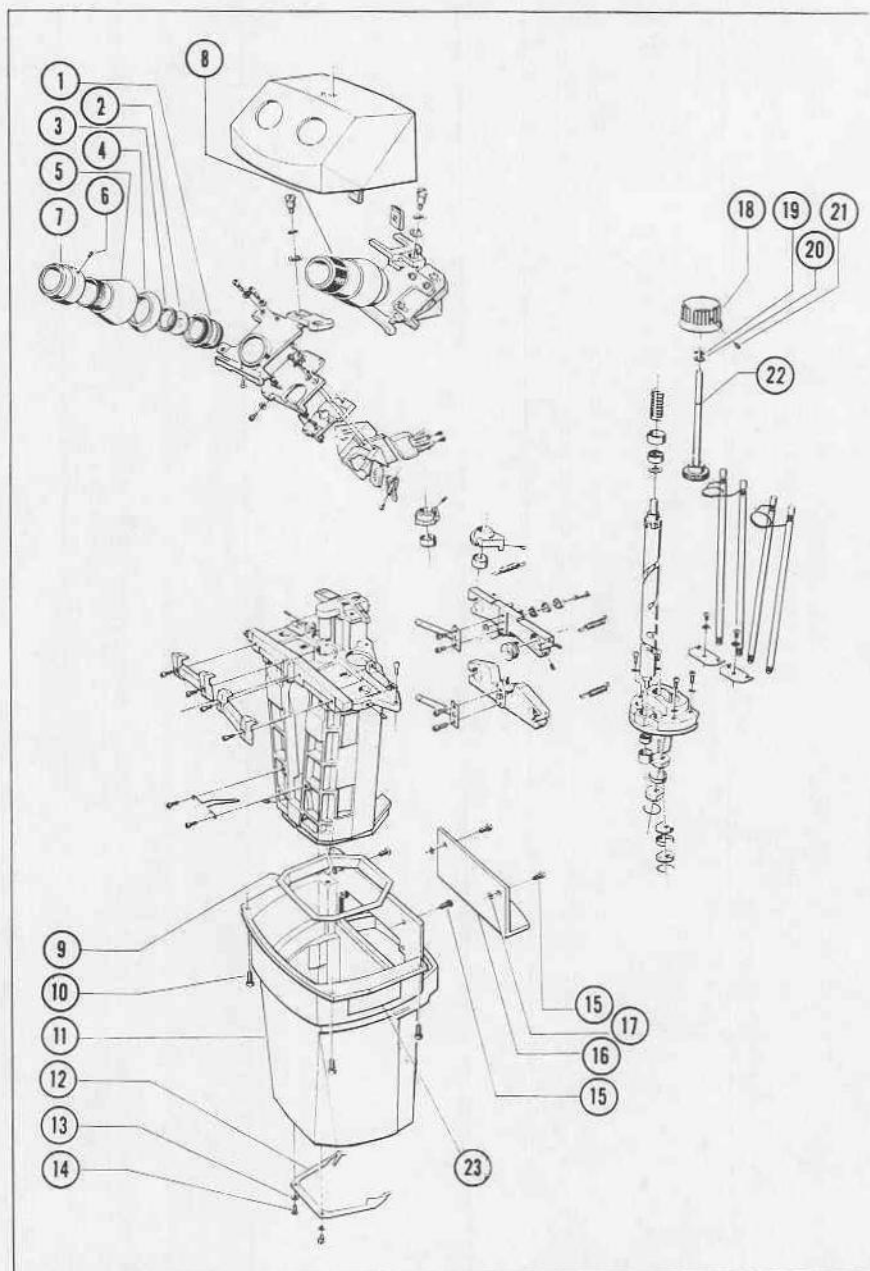


STEREOZOOM 5
POWER POD
CAT. NO. 31-27-40

Key	Description	Part No.	Key	Description	Part No.
1	Eyepiece Ring	312740-102	60	Cover Gasket	312694-312
2	2-64 x 1/16 lg Set Screw	312701-379	61	Retainer	312740-151
3	Lock Ring	312740-101	62	Lens I	312740-032
4	Adapter	312740-104	63	H-I Spacer	312740-118
5	Retaining Ring	312694-321	64	Lens GH Assy	312740-031
6	Adapter	312694-269	65	Left Objective Mount	312740-123
7	Dust Seal Washer	312694-234	66	Lead Screw Mount	312740-125
8	4-48 x 1/4 lg Set Screw	315153-120	67	6-40 x 3/8 lg Screw	312694-328
9	Dust Seal	312740-129	68	F-306 Washer	90008-369
10	Adj. Eyepiece Ring	312740-103	69	Driver Gear Support	312799-107
11	Mirror Housing	312740-142	70	Ball .1562 dia	312694-152
12	Tape	312740-132	71	Lock Nut	312694-322
13	Pivot Screw "A"	312694-144	72	Bearing Screw	312694-118
14	F-309 Washer	90008-377	73	6-32 x 3/8 lg Screw	312694-329
15	F-108 Washer	90008-281	74	F-310 Washer	90008-378
16	4-48 x 3/16 lg Screw	312694-326	75	Tru-Arc Retainer 5133-25	312695-111
17	F-120 Washer	90008-125	76	EP Mount Support	312799-102
*18	EP Mount Right (refer to key # 79)	312740-135	*78	Mirror Mount Right Assy	312694-376
	EP Mount Left (not exploded)	312799-115		Mirror Mount Left Assy	
24	Cell Mt B & Pad Assy	312694-348		(not exploded)	312694-375
25	Retainer	312740-105	*79	Tube—must be assembled with	
26	AB Lens Assy	312740-023		key # 18	312694-277
27	Spacer	312740-106	80	Spring Pin	312799-171
28	Lens C	312740-024	81	Dust Cover	312694-052
29	Mount ABC	312740-107	82	4-48 x 3/16 lg Set Screw	313326-128
30	L.H. Lead Screw & Gear Assy	312740-113	83	Dust Seal Cap	312694-259
	F-303 Washer (not shown)	90008-366	84	2-64 x 1/16 lg Set Screw	312740-136
	R.H. Lead Screw & Gear Assy		85	Hex Wrench	312740-148
	(not exploded)	312740-114	*Sold in Assembled Units Only.		
31	Gear	312799-183			
32	Gear Lock Nut	312694-169			
33	Magnification Knob Assy	312740-141			
34	F-304 Washer	90008-367			
35	6-32 x 1/2 lg Set Screw	312694-236			
36	Knob Washer	312694-141			
37	Shaft & Gear Assy	312740-133			
38	F-305 Washer	90008-368			
39	F-119	90008-124			
40	Washer (not shown)	312799-235			
41	2-56 x 3/16 lg. Screw	312694-292			
42	Obj. Mt. Cover	312799-178			
43	Cover Spring	312694-372			
44	Pad "B"	312694-105			
45	Cell Mt A Pad Assy	312694-351			
46	DEF Mount	312740-109			
47	Lens D	312740-025			
48	D-E Spacer	312740-110			
49	EF Lens Assy	312740-028			
50	Retainer	312740-111			
51	2-64 x 7/32 lg Set Screw	312694-310			
52	Guide Bar	312694-106			
53	8-36 x 9/32 lg Screw	312694-327			
54	Right Objective Mount	312740-120			
55	2-56 x 3/16 lg Screw	312694-302			
56	Objective Cover	312694-370			
57	6-40 x 3/8 lg Screw	312694-324			
58	6-32 x 9/32 lg Screw	316012-150			
59	6-40 x 29/32 lg Screw	312694-325			

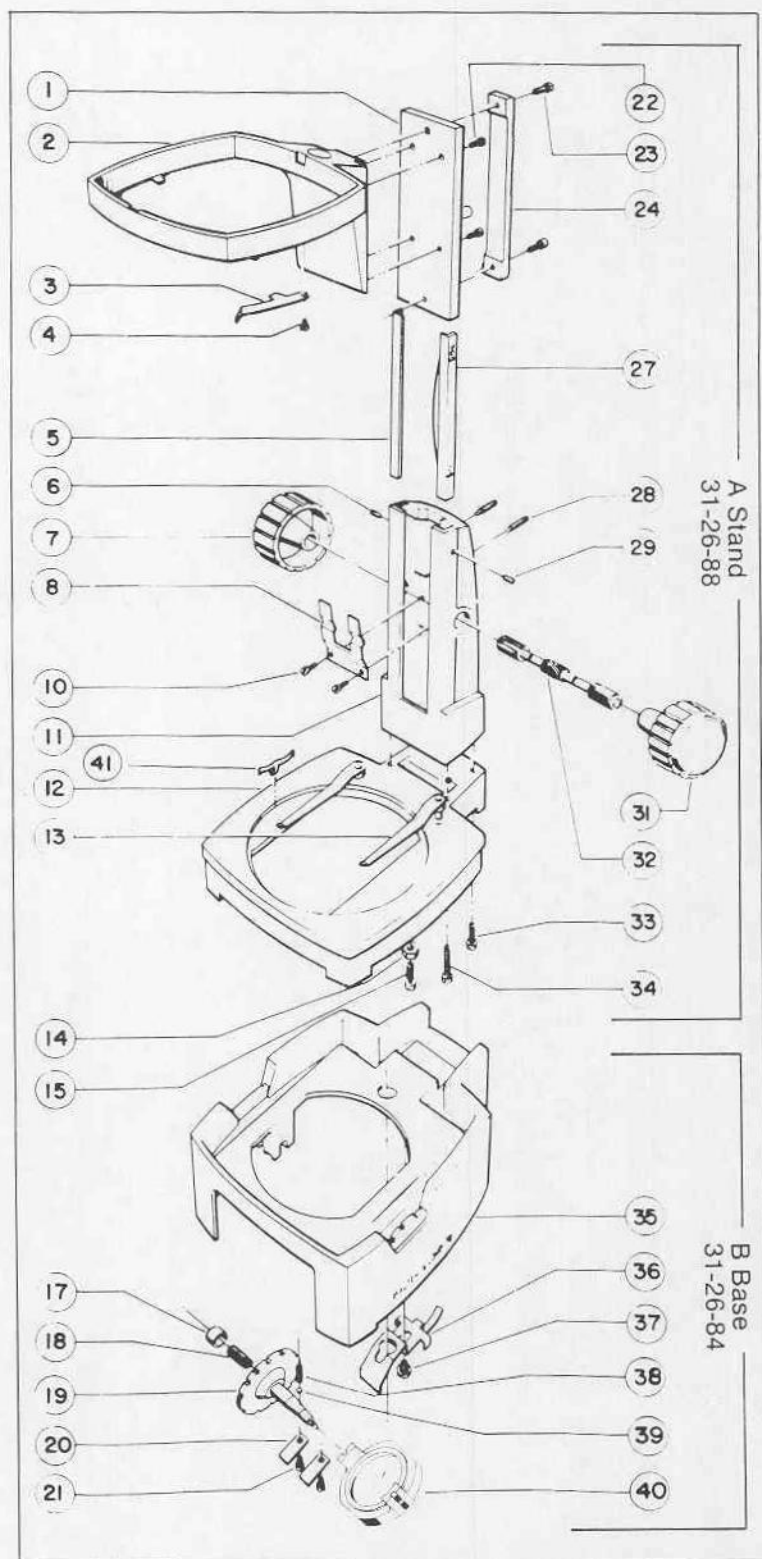
StereoZoom 7 **1.0X thru 7.0X** **Variable Power Pod,** **Cat. No. 31-27-01**

Key	Description	Part No.
1	Tube	312701-438
2	Dust Cover	312701-047
3	Snap Ring	312701-437
4	Dust Seal	312701-496
5	Adapter (left)	312701-234
6	Adapter (right)	312701-325
7	not exploded	312701-379ND
8	2-64 x 1/16 Set Screw	312701-235
9	Eyepiece Ring	312701-236
10	Eyepiece Adjusting Ring	312701-356
11	Gasket	312701-436ND
12	6-32 x 1/4 Fillister Hd Screw	312701-510
13	Lower Housing	312701-349
14	Mounting Spring	312701-351ND
15	1/8 x 1/4 dia Washer	312701-308ND
16	1-40 x 1/4 Phillips Hd Screw	312701-400ND
17	6-32 x 1/2 Fillister Hd Screw	312701-393
18	Cover Plate	90008-463
19	F-332 Washer	312701-507
20	Knob	312701-302ND
21	Tru-Arc 5103-25	90008-378
22	F-310 Washer	312701-485
23	4-40 x 1/4 Set Screw	312701-408
24	Gear & Shaft Assy	312701-509
25	Name Plate	



NOTE: IT IS RECOMMENDED THAT PARTS NOT NUMBERED BE REPLACED AND INSTALLED AT THE FACTORY SHOULD THE NEED EVER ARISE.

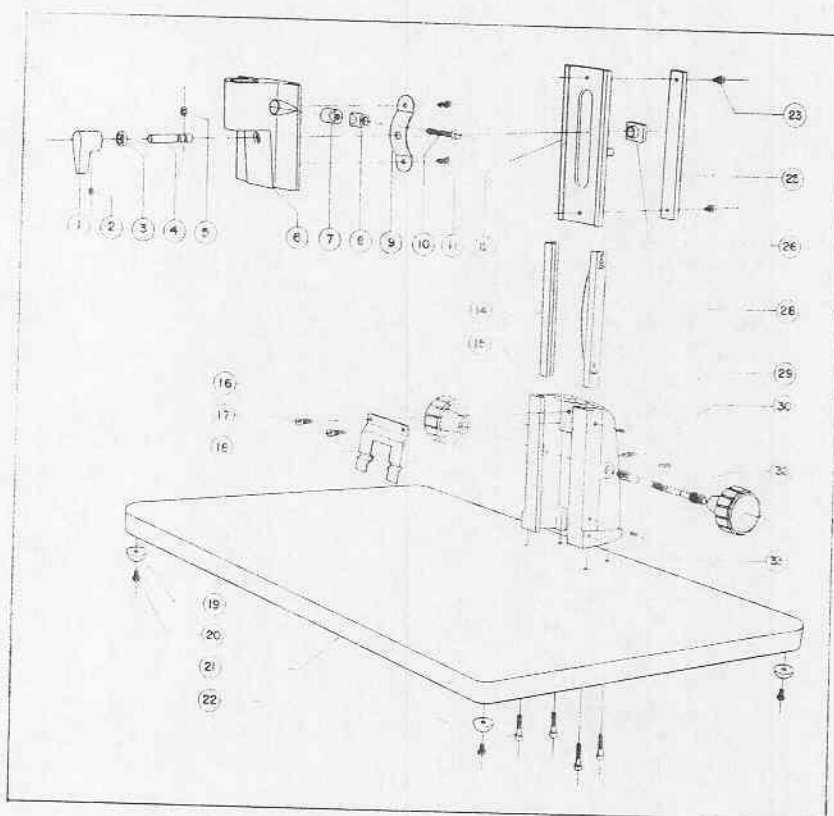
A and B Stands A Stand, Cat. No. 31-26-88 with B Base, Cat. No. 31-26-84



Key	Description	Part No.
1	Slide & Pin Assy	312688-188
2	Arm	312688-201
3	Lock Lever (left)	312688-121
4	Lock Lever (right) not exploded	312688-122
5	SD-119 Screw	90047-182
6	Gib	312688-192
7	8-36 x 1/4 Ig Set Screw	312688-198
8	Knob Assy	312697-198
10	Spring	312688-153
11	8-36 x 1/4 Ig Screw	312688-184ND
12	Upright	312688-200
13	Base	312688-199
14	Spring Clip	31-27-30
15	8-32 Hex. Nut	312688-103ND
17	SF-80 Screw	90049-117
18	Spring Cap	312684-104
19	Spring	312684-105
20	Mirror Axle	312684-121
21	Shaft Retainer A	312684-113
22	8-32 Self-Tap Screw	312684-125ND
23	8-32 FT10 Screw	97206-0807
24	F-83 Screw	90049-120
27	Rack	312688-109
28	Gib	312688-192
29	Spring Rivet	312688-193
31	Gib Screw B	311850-171
32	Set Screw	312688-178
33	Knob Assy	312688-198
34	Pinion	312697-198
35	8-36 x 7/16 Ig Screw	312688-187
36	8-36 x 15/16 Ig Screw	312688-185ND
37	Base	312688-183ND
38	Base Lock	312684-128
39	SF-79 Screw	312684-106
40	Ball Spring	90049-116 & 90008-8
41	Ball .125" 0	312684-111
42	Mirror Assy	312694-105
	Stage Plate Spring	312732-910
	Name Plate	312688-174
		312701-509

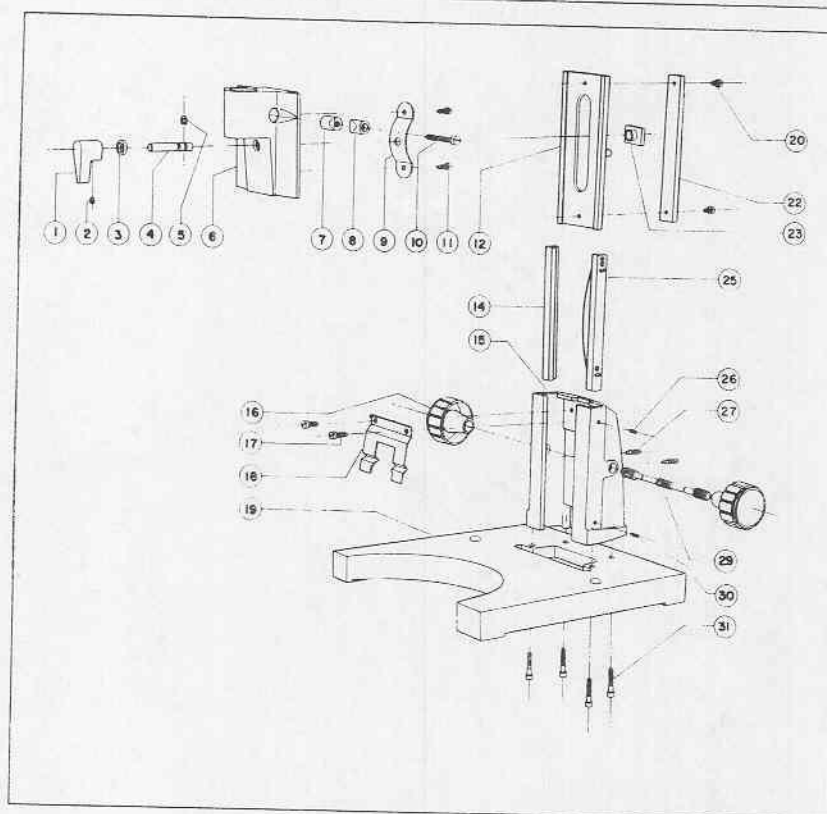
KT Stand, Cat. No. 31-26-65

K Stand, Cat. No. 31-26-95



KT STAND CAT. NO. 31-26-65

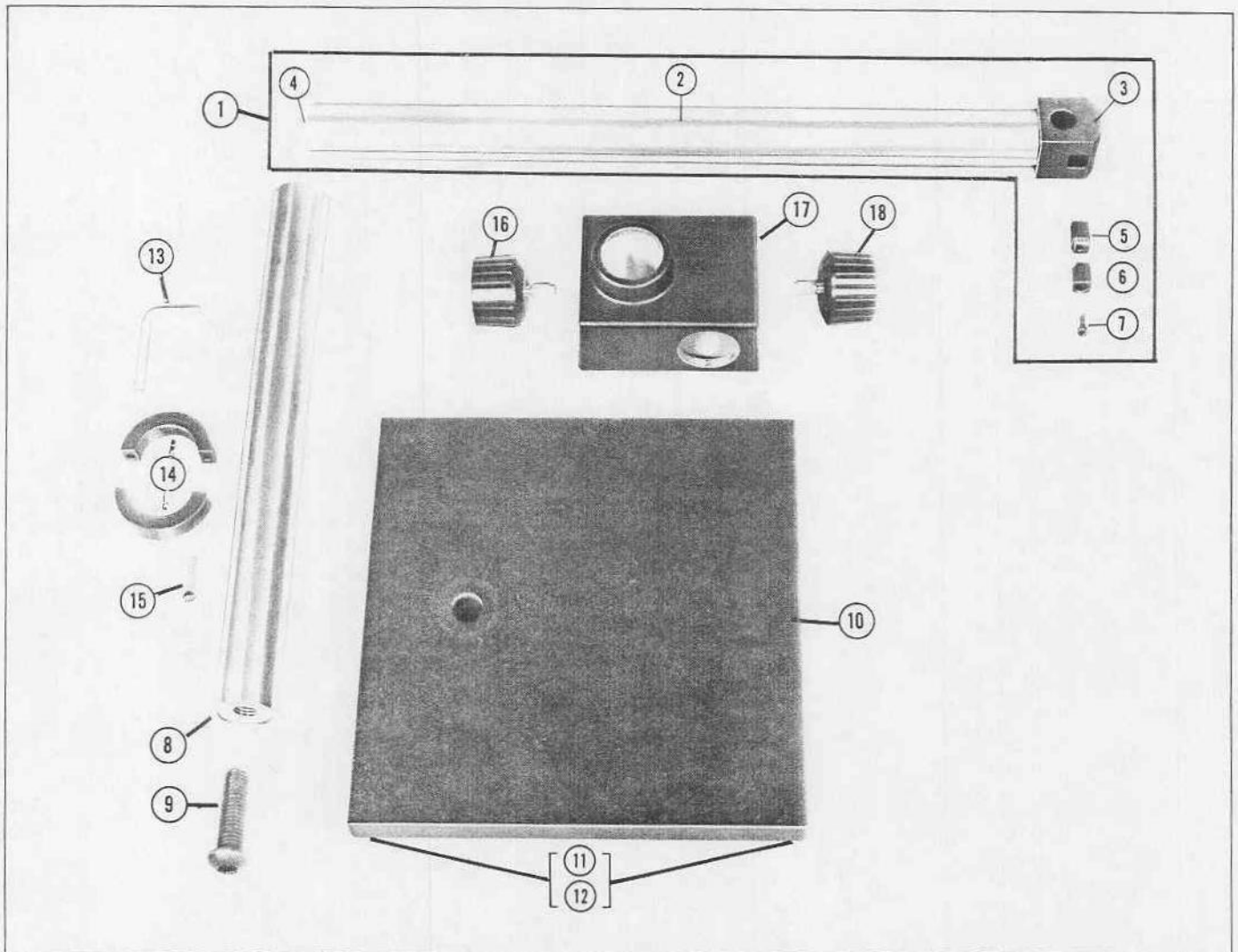
Key	Description	Part No.
1	Knob	312695-143NI
3	F-279 Washer	90008-321
4	Clamp Stud	312695-103
5	Tru Arc Retainer	312695-111NI
6	Joint Support	312695-148
7	Clamp Shoe A	312690-143
8	Clamp Shoe B	312690-144
9	Friction Spring	312695-105
10	10-32 x 3/4 lg. Screw	312697-200NI
11	SF-81 Screw (2)	90049-118
12	Slide & Pin Assy	312695-144
14	Gib	312688-192
15	Upright	312695-149
16	Knob Assy	312697-198
17	8-36 x 1/4 lg. Screw	312688-184
18	Spring (Pinion)	312688-153
19	Rubber Bumper	312665-103NI
20	6-32 x 1/2 Self Tap Screw	312665-104NI
21	Base	312665-101
22	8-36 x 3/4 lg. Screw	312695-142NI
23	SF-83 Screw	90049-120
25	Rack	312695-107
26	Clamp Shoe	312695-140
28	Gib	312688-192
	Spring	312688-193
	Rivet	311850-171
29	Gib Screw	312688-198
30	Gib Screw B	312688-178
32	Pinion	312688-187
33	Gib Screw	312688-198



K STAND CAT. NO. 31-26-95

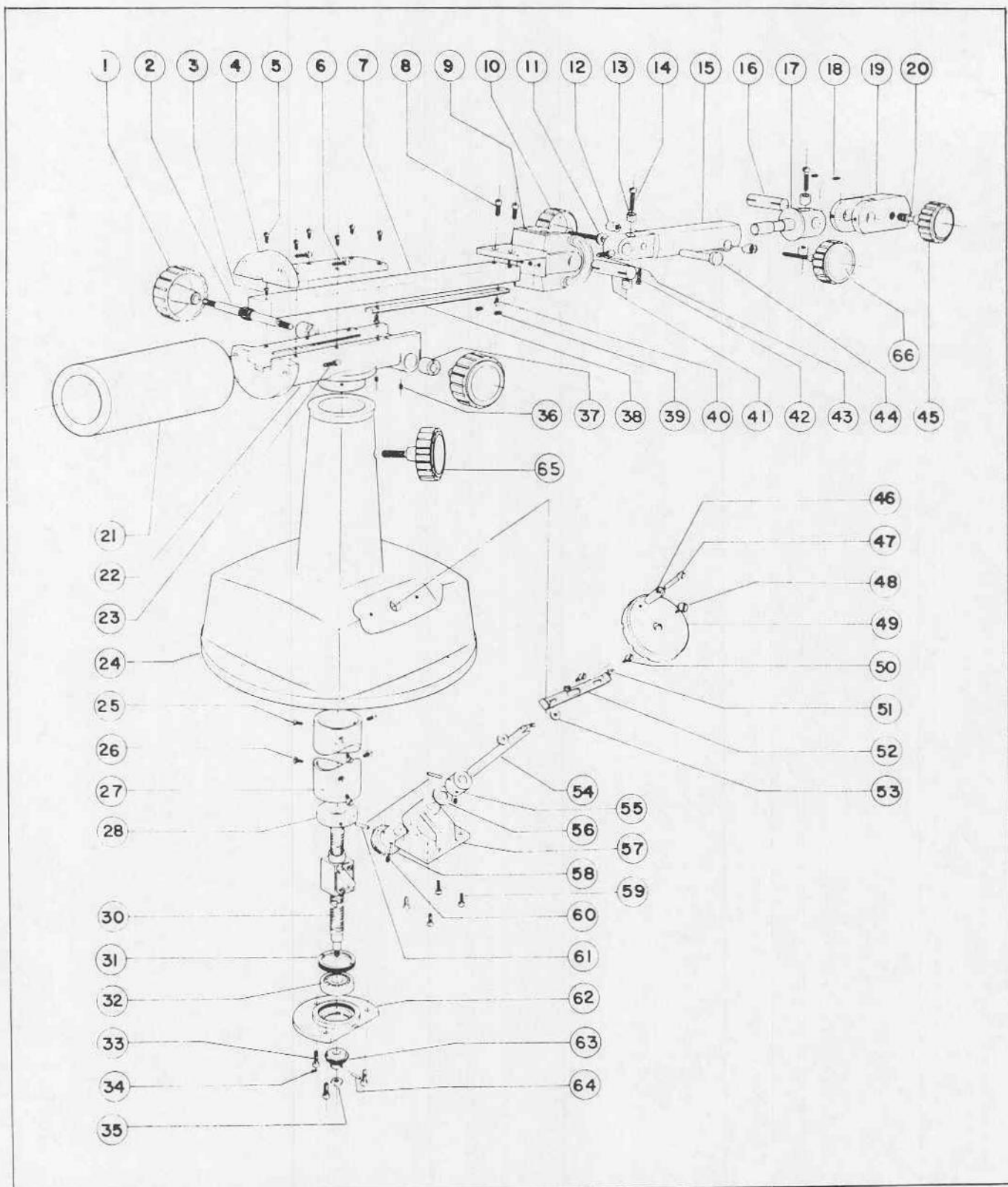
Key	Description	Part No.
1	Knob	312695-143NI
3	F-279 Washer	90008-321
4	Clamp Stud	312695-103
5	Tru Arc Retainer	312695-111NI
6	Joint Support	312695-148
7	Clamp Shoe A	312690-143
8	Clamp Shoe B	312690-144
9	Friction Spring	312695-105
10	10-32 x 3/4 lg. Screw	312697-200ND
11	SF-81 Screw (2)	90049-118
12	Slide & Pin Assy	312695-144
14	Gib	312688-192
15	Upright	312695-149
16	Knob Assy	312697-198
17	8-36 x 1/4 lg. Screw	312688-184
18	Spring (Pinion)	312688-153
19	Base	312695-134
20	SF-83 Screw	90049-120
22	Rack	312695-107
23	Clamp Shoe	312695-140
25	Gib	312688-192
	Spring	312688-193
	Rivet	311850-171
26	Gib Screw	312688-198
27	Gib Screw B	312688-178
29	Pinion	312688-187
30	Gib Screw	312688-198
31	8-36 x 3/4 lg. Screw	312695-142ND

S Stand, Cat. No. 31-27-14



Key	Description	Part No.
1	Shaft Assembly (included parts 2 thru 7)	312714-910ND
2	Shaft	312714-121
3	Head	312714-128
4	Bottom Plug	312714-138ND
5	Clamp Shoe A	312714-126
6	Clamp Shoe B	312714-127
7	Screw	312714-141ND
8	Vertical Column	312714-122
9	Screw	312714-136ND
10	Base	312714-120
11	Feet (4 required)	312714-133ND
12	Screw (4 required)	312714-155ND
13	Lock Screw	312714-125
14	Collar (2 required)	312714-124
15	Screw	312714-134ND
16	Knob-Stud Assy "B"	312714-132
17	Holder	312714-113
18	Knob-Stud Assy "A"	312714-149

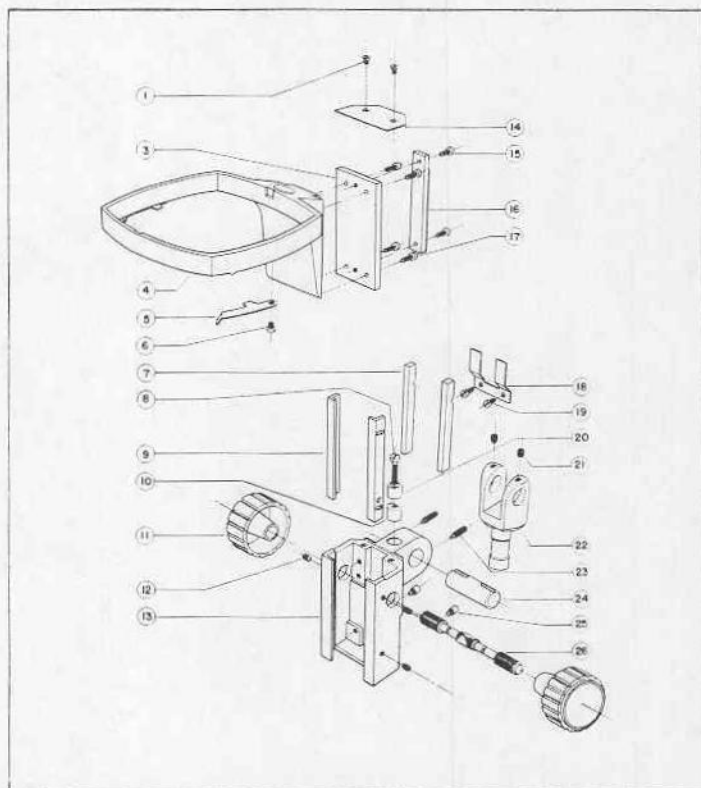
SK Stand, Cat. No. 31-26-97



Key	Description	Part No.	Key	Description	Part No.
1	Knob Assy	312697-198	*35	10-32 Hex. Nut	312697-180ND
2	Pinion	312697-193	36	10-32 x 1/8 Ig Set Screw	312697-151ND
3	6-40F6T Screw	97206-1610	37	Pinion Bearing (2)	312697-132
4	Pivot Assy (Top)	312697-168	38	Arm Rack	312697-164
5	6-32 x 5/16 Ig Screw	316012-150	39	10-32 x 3/8 Ig Set Screw	312697-156ND
6	10-32 x 1/2 Ig Cap Screw	312697-202ND	40	SE-43 Screw	90048-77
7	Horizontal Arm	312697-165	41	Axle "B"	312697-191
8	250-28 x 3/8 Ig Cap Screw	312697-203ND	42	Screw	312697-172
9	Clamp Bearing	312697-192	43	1/4-28 x 5/8 Cap Screw	312697-203ND
10	Small Knob	312697-199	44	Clamp Pin	312697-126
	Knob Shaft	312697-196	45	Small Knob	312697-199
11	Washer	312697-140	46	Handle	312697-113
12	Clamp Shoe "B"	312690-144	47	Handle Screw	312697-114
13	Clamp Shoe "A"	312690-143	48	Knob Screw "A"	312697-116
14	10-32 x 3/4 Ig Screw	312697-200ND	49	Elevation Crank	312697-112
15	Swing Arm	312697-175	50	Shoulder Screw	312697-138
16	Axle A	312697-190	51	F-261 Washer	90008-293
17	Joint B	312697-130	52	Lock Assy	312697-139
18	10-32 x 3/8 Ig Set Screw	312697-156ND	53	F-157 Washer	90008-162
19	Joint A	312697-189	*54	Drive Gear Shaft	312697-115
20	Knob Screw	312697-197	*55	Collar	312697-105
21	Counter Balance	312697-170	*56	F-239 Washer	9008-246
22	Pivot Assy (Base)	312697-168	*57	Drive Gear Bearing	312697-106
23	10-32 x 1/2 Ig Cap Screw	312697-202ND	*58	Drive Gear	312697-107
24	Base	312697-169	*59	10-24F16S	96206-1002
25	10-32C12S Screw (4)	96202-2004	*60	8-36V8S Set Screw	96228-1801
26	Screw (3)	312697-167	61	I-341 Roll Pin	90011-359
27	Lift Tube	312697-103	*62	Bearing Support	312697-109
*28	Ball Nut Retainer	312697-110	*63	Driven Gear	312697-108
*30	Jack Screw & Nut	312697-101	*64	I-395 Roll Pin	90011-403
*31	Bearing Retainer	312697-111	65	Knob Assy	312697-143
*32	Ball Bearing	312697-104ND	66	Small Knob Assy	312697-199
*33	1/4-20 x 3/4 Ig Cap Screw	211043-204ND	*Sold in Assembled Units Only		
*34	4-48 V4M Screw	94228-1400			

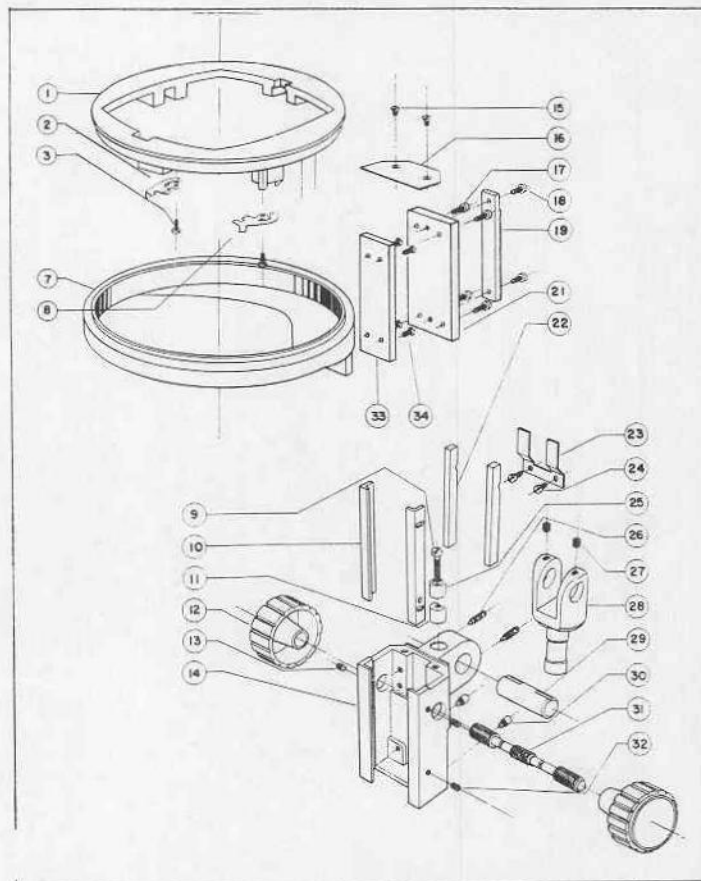
E (Stationary) Arm, Cat. No. 31-26-59

ER (Rotatable) Arm, Cat. No. 31-26-90



E (STATIONARY) ARM CAT. NO. 31-26-59

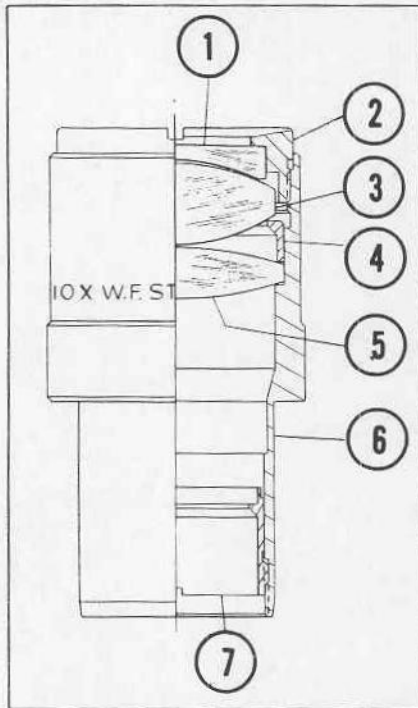
Key	Description	Part No.
1	4-48 x 1/4 lg Screw	312690-127ND
3	Upper Slide & Pin Assy	312690-141
4	Arm	312688-201
5	Lock Lever (right) (not exploded left)	312688-121
6	SD-119 Screw	312688-122
7	Rear Gib	90047-182
8	10-32 x 3/4 lg Screw	312690-121
9	Front Gib	312697-200ND
10	Clamp Shoe "A"	312690-122
11	Knob Assy	312690-143
12	Gib Screw "A"	312697-198
13	Housing	312688-198
14	Cover	312690-147
15	SF-83 Screw	312690-148
16	Upper Rack	90049-120
17	8-32 x 5/16 lg Screw	312689-106
18	Spring	312659-106
19	4-48 x 1/4 lg Screw	312659-105
20	Clamp Shoe "B"	312690-126ND
21	10-32 x 3/75 lg Set Screw	312690-144
22	Joint & Stop Assy	312697-156ND
23	Gib Screw "B"	312689-910
24	Axle "A"	312690-142
25	Gib Screw	312697-190
26	Pinion	312690-139
		312690-132



ER (ROTATABLE) ARM CAT. NO. 31-26-90

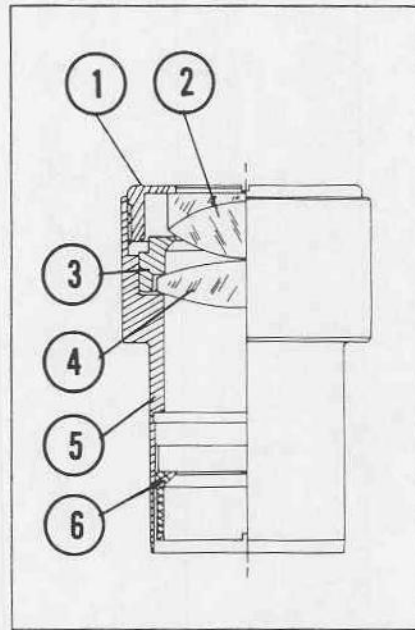
Key	Description	Part No.
1	Body Bearing	312690-149
2	Lock Lever "A"	312690-134
3	8-32 x 3/16 lg Screw	312690-145
7	Arm	312690-146
8	Lock Lever "B"	312690-135
9	10-32 x 3/4 lg Screw	312690-136
10	Front Gib	312697-200ND
11	Shoe Clamp "A"	312690-122
12	Knob Assy	312690-143
13	Gib Screw "A"	312697-198
14	Housing	312688-198
15	4-48 x 1/4 lg Screw	312690-147
16	Cover	312690-148
17	8-32F12T Screw (4)	312690-148
18	F-83 Screw (2)	97206-1826
19	Upper Rack	90049-120
21	Upper Slide	312689-106
22	Rear Gib	312690-141
23	Spring	312690-121
24	4-48 x 1/4 lg Screw	312659-105
25	Shoe Clamp "B"	312690-126ND
26	Gib Screw "B"	312690-144
27	10-32 x 3/8 lg Set Screw	312690-142
28	Joint & Stop Assy	312697-156ND
29	Axle "A"	312689-910
30	Gib Screw	312697-190
31	Pinion	312690-139
32	Gib Screw "A"	312690-132
33	Adapter	312688-198
34	4-40 x 1/4 Screw	312690-134
		312690-137

Wide Field Eyepieces



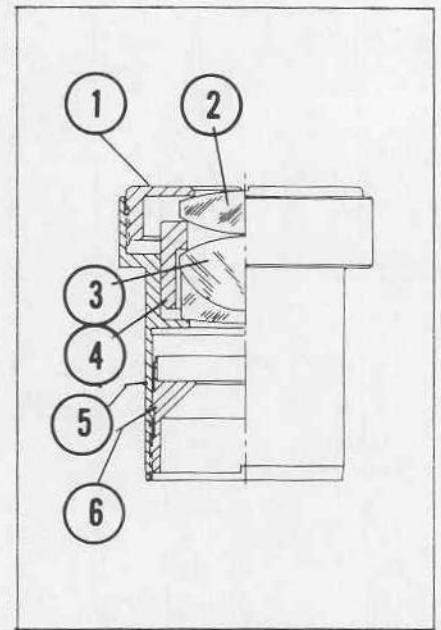
**10X EYEPIECE FOR STEREO 1 & 2,
STEREOZOOM 3, 4, & 5**
CAT. NO. 31-15-71

Key	Description	Part No.
1	Lens C	311571-023
2	Cap	311571-101
3	Lens B	311571-022
4	Spacer	311571-102
5	Lens A	311571-021
6	Tube	311571-103
7	Diaphragm	310567-104



**15X EYEPIECE FOR STEREO 1 & 2,
STEREOZOOM 3, 4, & 5**
CAT. NO. 31-05-62

Key	Description	Part No.
1	Retainer	310562-109
2	AB Lens Assy	310552-023
3	Spacer	310562-102
4	Lens C	310562-024
5	Tube	310562-110
6	Diaphragm	310562-108

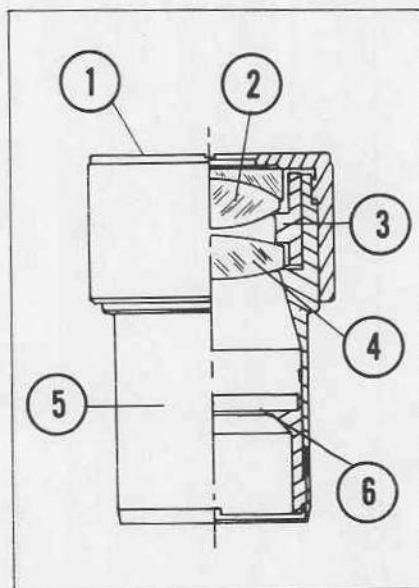


**20X EYEPIECE FOR STEREO 1 & 2,
STEREOZOOM 3, 4, 5, & 7**
CAT. NO. 31-05-63

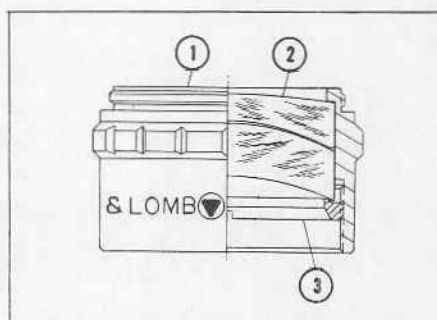
Key	Description	Part No.
1	Retainer	310563-108
2	A Lens	310563-021
3	BC Lens Assy	310563-024
4	Spacer	310563-102
5	Tube	310563-109
6	Diaphragm	310563-106

**15X EYEPIECE FOR
STEREOZOOM 7**
CAT. NO. 31-05-68

Key	Description	Part No.
1	Retainer	310568-107
2	Lens BC Assy	310568-024
3	Spacer	310568-102
4	Lens A	310568-021
5	Barrel	310568-103
6	Diaphragm	310568-104

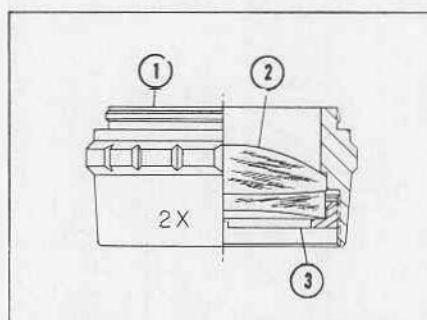


Supplementary Lenses For Stereo 1 & 2, StereoZoom 3, 4 & 5



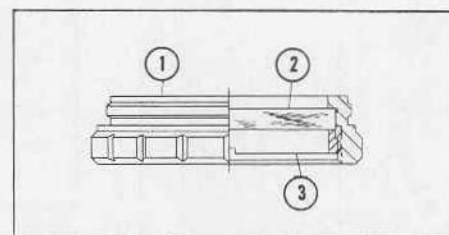
0.5X LENS **CAT. NO. 31-26-18**

Key	Description	Part No.
1	Mount	312618-106
2	Lens AB Assembly	312618-025
3	Retainer	312618-110



2X LENS **CAT. NO. 31-26-19**

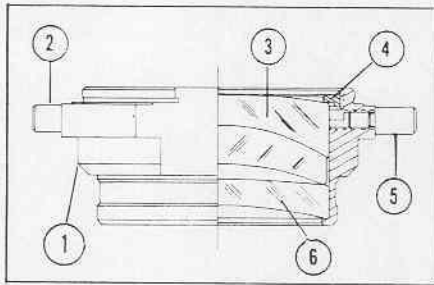
Key	Description	Part No.
1	Mount	312619-107
2	Lens AB Assy	312619-028
3	Retainer	312619-110



CLEAR GLASS LENS SHIELD
CAT. NO. 31-26-21

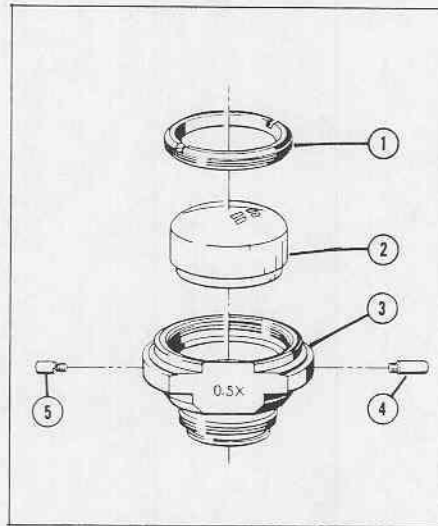
Key	Description	Part No.
1	Lens Shield Mt.	312621-101
2	Lens Shield	312621-022
3	Retainer	312621-102

Supplementary Lenses For StereoZoom 7



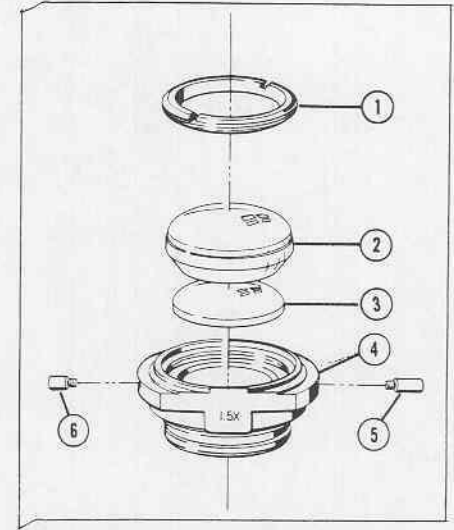
.25X LENS ADAPTER
CAT. NO. 31-27-08

Key	Description	Part No.
1	Mount	312708-102
2	Pin	312704-108
3	AB Lens Assy	312708-023
4	Retainer	312708-103
5	Pin	312704-107
6	C Lens	312708-024



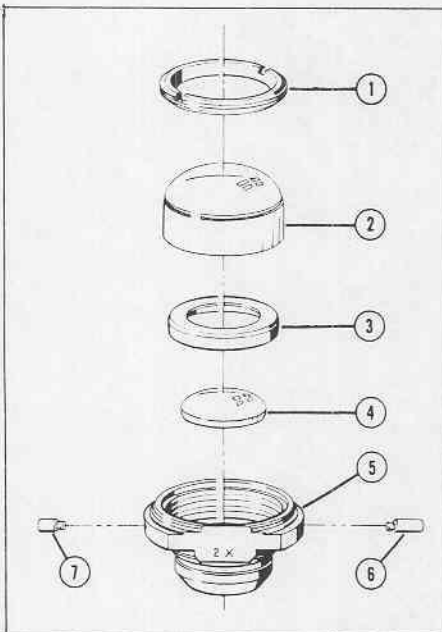
0.5X LENS **CAT. NO. 31-27-04**

Key	Description	Part No.
1	Retainer	312704-102
2	Lens AB Assy	312704-026
3	Mount	312704-101
4	Pin	312704-107
5	Pin	312704-108



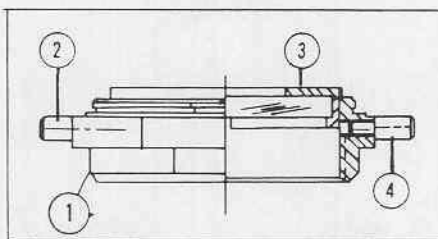
1.5X LENS **CAT. NO. 31-27-05**

Key	Description	Part No.
1	Retainer	312704-102
2	Lens AB Assy	312705-026
3	Lens C	312705-024
4	Mount	312705-101
5	Pin	312704-107
6	Pin	312704-108



2.0X LENS **CAT. NO. 31-27-06**

Key	Description	Part No.
1	Retainer	312704-102
2	Lens AB Assy	312706-026
3	Spring	312706-103
4	Lens C	312706-024
5	Mount	312706-105
6	Pin	312704-107
7	Pin	312704-108



LENS SHIELD **CAT. NO. 31-27-35**

Key	Description	Part No.
1	Mount	312734-101
2	Pin	312704-108
3	Seal Assy	312735-103
4	Pin	312704-107

Refer to StereoZoom Microscope Catalog #31-3001 for full descriptions.

Cat. No.	DESCRIPTION
POWER PODS	
31-26-91	Stereo 1 Fixed Power Pod, 1.0X
31-26-92	Stereo 2 Fixed Power Pod, 2.0X
31-26-93	StereoZoom 3 Variable Power Pod, 1.0X—2.5X
31-26-94	StereoZoom 4 Variable Power Pod, 0.7X—3.0X
31-27-40	StereoZoom 5 Variable Power Pod, 0.8X—4.0X
31-27-01	StereoZoom 7 Variable Power Pod, 1.0X—7.0X
STANDS & ARMS	
31-26-88-87	A Stand
31-26-84-88	B Stand
31-26-95	K Stand
31-27-14	S Stand
31-26-65	KT Stand
31-26-97	SK Stand
31-27-50-01	RA Stand
31-27-50-22	RB Stand, 120V—UL
31-27-50-23	RC Stand, 120V—UL & CSA
31-27-50-24	RD Stand, 120V—UL
31-27-50-25	RE Stand, 120V—UL & CSA
31-26-59	E Arm
31-26-90	ER Arm
STAND & ARM ACCESSORIES	
31-26-84	B Base (Base only)
31-26-84-86	Trans-Illumination Base
31-26-86	Clear Glass Stage Plate for B Stand
31-26-87	Opaque Contrast Plate for A Stand
31-26-88	A Stand (Stand only)
31-27-03	Elevator
31-27-21	Nicholas Illuminator Adapter for ER Arm
31-27-30	Stage Clip
31-27-32	3-Way Mirror
31-27-48	Graduated Mechanical Stage for A Stand
31-27-49	Graduated Mechanical Stage for B Stand
31-27-54	Plain Stage for R Stands
31-27-55	Graduated 3" x 3" Mechanical Stage for R Stands
31-27-60	Ungraduated 4" x 5" Right Hand Mechanical Stage for R Stands
31-27-61	Ungraduated 4" x 5" Left Hand Mechanical Stage for R Stands
31-60-35	5" x 5" Mask Paddle for 4" x 5" Stages
31-60-36	4" Waffer Paddle for 4" x 5" Stages
31-60-37	3" x 3" Mask Paddle for 4" x 5" Stages
31-60-38	4" x 4" Mask Paddle for 4" x 5" Stages
31-60-39	3" Waffer Paddle for 4" x 5" Stages
31-60-40	2½" x 3" Lazy Susan Wafer Paddle for 4" x 5" Stages
31-60-41	3" x 4" Lazy Susan Wafer Paddle for 4" x 5" Stages

Cat. No.	DESCRIPTION
EYEPIECES & EYEGUARDS	
31-15-71	10X Wide Field Eyepiece for Stereo 1 & 2/StereoZoom 3, 4, 5 & 7
31-05-62	15X Wide Field Eyepiece for Stereo 1 & 2/StereoZoom 3, 4 & 5
31-05-63	20X Wide Field Eyepiece for Stereo 1 & 2/StereoZoom 3, 4, 5 & 7
31-05-65	33X Wide Field Eyepiece for Stereo 1 & 2/StereoZoom 3 & 4
31-05-68	15X Wide Field Eyepiece for StereoZoom 7
31-49-28	Eyeguard for 31-05-68 & 31-15-71 Eyepieces
31-50-64	Eyeguard for 31-05-62 & 31-05-63 Eyepieces
42-12-02	10X Wide Field Viewfinder Eyepiece

SUPPLEMENTARY LENS ATTACHMENTS	
31-99-14	0.3X Lens Attachment for Stereo 1 & 2/StereoZoom 3, 4 & 5
31-26-18	0.5X Lens Attachment for Stereo 1 & 2/StereoZoom 3, 4, & 5
31-26-19	2.0X Lens Attachment for Stereo 1 & 2/StereoZoom 3, 4 & 5
31-26-21	Lens Shield for Stereo 1 & 2/StereoZoom 3, 4 & 5
31-27-08	0.25X Lens Attachment for StereoZoom 7
31-27-04	0.5X Lens Attachment for StereoZoom 7
31-27-05	1.5X Lens Attachment for StereoZoom 7
31-27-06	2.0X Lens Attachment for StereoZoom 7
31-27-35	Lens Shield for StereoZoom 7

POLARIZING ACCESSORIES	
31-27-27-01	Polarizing Accessory for Stereo 1 & 2/StereoZoom 3, 4 & 5 on B Stand
31-27-27-02	Polarizing Accessory for StereoZoom 7 on B Stand
31-27-57-01	Polarizing Accessory for StereoZoom 7 on RB or RD Stand

MICROMETER DISCS	
31-16-04	Micro. Disc; measures 0.002" at 2X Pod magnification
31-16-07	Micro. Disc; measures 0.005" at 1X Pod magnification
31-16-08	Micro. Disc; measures 0.001" at 3X Pod magnification
31-16-30	Cross Line Disc
31-16-42	Micro. Disc; measures 0.001" at 3X Pod magnification
31-16-43	Micro. Disc; measures 0.02mm at 5X Pod magnification
31-16-44	Micro. Disc; measures 0.01mm at 7X Pod magnification

- 31-16-45 Grid Reticle; squares of .002" & .010" at 5X
Pod magnification
- 31-16-46 Protractor Reticle; single degrees thru 360°
- 31-16-47 General Purpose Reticle; linear, angular &
radii scales
- 31-16-48 Viewfinder Reticle; for photography
- 31-16-87 Stage Micrometer; ruled to 0.005"
- 31-16-89 Stage Micrometer; ruled to 0.001"
- 31-16-90 Stage Micrometer; ruled to 0.01mm
- 31-16-99 Precision Stage Micrometer; ruled to
0.01mm

CASES

- 31-40-37 Carrying Case for series B stereo
microscopes
- 31-40-38 Carrying Case for series A stereo
microscopes

Refer to StereoZoom Microscope Catalog
or to specific instruction manuals for detailed
information concerning illuminators and
photomicrographic equipment.

10.0

StereoZoom Microscope Tables

These tables provide all the data you need to determine the proper optical combination—eyepieces, Power Pod, and supplementary lenses—for your specific application.

Field diameter (the viewing area) is a function of magnification. The lower the magnification, the larger the field size and vice versa. Choice of magnification depends upon the type of material you will be viewing. In general, you need higher magnification for very fine detail, and lower power to view larger areas or for greater depth of focus.

Stereo 1 1X POWER POD

Wide Field Eyepieces	Without Supplementary Lens			With 3X Lens			With 5X Lens			With 2X Lens		
	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.
10X	20mm (.78in)	10X	100mm (4in)	66mm (2.6in)	3X	267mm (10.5in)	40mm (1.56in)	5X	178mm (7in)	10mm (.39in)	20X	38mm (1.5in)
15X	17mm (.66in)	15X	100mm (4in)	56mm (2.2in)	4.5X	267mm (10.5in)	34mm (1.32in)	7.5X	178mm (7in)	8.4mm (.33in)	30X	38mm (1.5in)
20X	12mm (.47in)	20X	100mm (4in)	40mm (1.56in)	6X	267mm (10.5in)	24mm (.94in)	10X	178mm (7in)	6mm (.24in)	40X	38mm (1.5in)
33X	4.6mm (.18in)	33X	100mm (4in)	15mm (.6in)	9.9X	267mm (10.5in)	8.9mm (.35in)	16.5X	178mm (7in)	2.3mm (.09in)	66X	38mm (1.5in)

Stereo 2 2X POWER POD

Wide Field Eyepieces	Without Supplementary Lens			With 3X Lens			With 5X Lens			With 2X Lens		
	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.
10X	10mm (.39in)	20X	100mm (4in)	33mm (1.3in)	6X	267mm (10.5in)	20mm (.78in)	10X	178mm (7in)	4.8mm (.19in)	40X	38mm (1.5in)
15X	8.4mm (.33in)	30X	100mm (4in)	28mm (1.1in)	9X	267mm (10.5in)	17mm (.66in)	15X	178mm (7in)	4mm (.16in)	60X	38mm (1.5in)
20X	6mm (.24in)	40X	100mm (4in)	20mm (.8in)	12X	267mm (10.5in)	12mm (.47in)	20X	178mm (7in)	3mm (.12in)	80X	38mm (1.5in)
33X	2.3mm (.09in)	66X	100mm (4in)	7.6mm (.3in)	19.8X	267mm (10.5in)	4.6mm (.18in)	33X	178mm (7in)	1mm (.04in)	132X	38mm (1.5in)

StereoZoom 3 1X to 2.5X POWER POD

Wide Field Eyepieces	Without Supplementary Lens			With 3X Lens			With 5X Lens			With 2X Lens		
	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.
10X	20mm (.78in) to 16mm (.63in)	10X to 25X	100mm (4in)	67mm (2.6in) to 26.3mm (1in)	3X to 7.5X	267mm (10.5in)	40mm (1.56in) to 16mm (.62in)	5X to 12.5X	178mm (7in)	10mm (.39in) to 4mm (.16in)	20X to 50X	38mm (1.5in)
15X	17mm (.66in) to 7mm (.26in)	15X to 37.5X	100mm (4in)	57mm (2.2in) to 23mm (.91in)	4.5X to 11.25X	267mm (10.5in)	34mm (1.32in) to 13mm (.51in)	7.5X to 16.75X	178mm (7in)	8.4mm (.33in) to 3.3mm (.13in)	30X to 75X	38mm (1.5in)
20X	12mm (.47in) to 5mm (.19in)	20X to 50X	100mm (4in)	40mm (1.56in) to 15mm (.53in)	6X to 15X	267mm (10.5in)	24mm (.94in) to 9.6mm (.38in)	10X to 25X	178mm (7in)	6mm (.24in) to 2.3mm (.09in)	40X to 100X	38mm (1.5in)
33X	4.6mm (.18in) to 1.8mm (.07in)	33X to 82.5X	100mm (4in)	15mm (.6in) to 6mm (.23in)	9.9X to 24.75X	267mm (10.5in)	8.9mm (.35in) to 3.5mm (.14in)	16.5X to 41.25X	178mm (7in)	2.3mm (.09in) to 1mm (.04in)	66X to 165X	38mm (1.5in)

StereoZoom 4 .7X to 3X POWER POD

Wide Field Eyepieces	Without Supplementary Lens			With 3X Lens			With 5X Lens			With 2X Lens		
	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.
10X	28mm (1.1in) to 6.6mm (.26in)	.7X to 30X	100mm (4in)	93mm (3.7in) to 22mm (.87in)	2.1X to 9X	267mm (10.5in)	57mm (2.2in) to 13mm (.52in)	3.5X to 15X	178mm (7in)	14mm (.56in) to 3.3mm (.13in)	14X to 60X	38mm (1.5in)
15X	24mm (.94in) to 5.6mm (.22in)	10.5X to 45X	100mm (4in)	80mm (3.1in) to 19mm (.73in)	3.15X to 13.5X	267mm (10.5in)	48mm (1.89in) to 11mm (.44in)	5.25X to 22.5X	178mm (7in)	12mm (.47in) to 2.2mm (.11in)	21X to 90X	38mm (1.5in)
20X	17mm (.67in) to 4mm (.16in)	14X to 60X	100mm (4in)	57mm (2.23in) to 13.3mm (.53in)	4.2X to 18X	267mm (10.5in)	34mm (1.35in) to 7.8mm (.31in)	7X to 30X	178mm (7in)	8.6mm (.34in) to 2mm (.08in)	28X to 120X	38mm (1.5in)
33X	6.4mm (.25in) to 1.5mm (.06in)	23.1X to 99X	100mm (4in)	21mm (.83in) to 5mm (.2in)	6.93X to 29.7X	267mm (10.5in)	13mm (.51in) to 49.5X	11.55X to 198X	178mm (7in)	3.3mm (.13in) to 8mm (.31in)	46.5X to 198X	38mm (1.5in)

StereoZoom 5 .8X to 4X POWER POD

Wide Field Eyepieces	Without Supplemental Lens			With 3X Lens			With 5X Lens			With 2X Lens		
	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.
10X	24.9mm (.98in)	8X	100mm (4in)	83mm (3.25in)	2.4X	267mm (10.5in)	49.7mm (1.96in)	4X	165mm (6.5in)	12.4mm (.49in)	16X	32mm (1.25in)
	to 5mm (.20in)	to 40X		to 16.6mm (.65in)	to 12X		to 10mm (.40in)	to 20X		to 2.5mm (.10in)	to 80X	
15X	20.8mm (.82in)	12X	100mm (4in)	69mm (2.75in)	3.6X	267mm (10.5in)	42mm (1.65in)	6X	165mm (6.5in)	10.4mm (.41in)	24X	32mm (1.25in)
	to 4.1mm (.16in)	to 60X		to 13.5mm (.53in)	to 18X		to 8.4mm (.33in)	to 30X		to 2mm (.08in)	to 120X	
20X	15.1mm (.59in)	16X	100mm (4in)	49.7mm (1.96in)	4.8X	267mm (10.5in)	29.9mm (1.18in)	8X	165mm (6.5in)	7.3mm (.29in)	32X	32mm (1.25in)
	to 3.05mm (.12in)	to 80X		to 10.2mm (.39in)	to 24X		to 6.1mm (.24in)	to 40X		to 1.5mm (.06in)	to 160X	

StereoZoom 7 1X to 7X POWER POD

Wide Field Eyepieces	Without Supplemental Lens			With .25X Lens			With 5X Lens			With 1.5X Lens			With 2X Lens		
	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.	Field Diam.	Total Mag.	Work Dist.
10X	20mm (.79in)	10X	76mm (3in)	84mm (3.39in)	2.5X	266mm (10.5in)	40mm (1.57in)	5X	127mm (5in)	132.2mm (5.2in)	15X	32mm (1.25in)	10mm (.39in)	20X	14mm (.56in)
	to 2.7mm (.11in)	to 70X		to 12mm (.48in)	to 17.5X		to 6mm (.22in)	to 35X		to 2mm (.08in)	to 105X		to 1.5mm (.06in)	to 140X	
15X	14mm (.55in)	15X	76mm (3in)	58mm (2.37in)	3.8X	266mm (10.5in)	28mm (1.10in)	7.5X	127mm (5in)	9.4mm (.37in)	22.5X	32mm (1.25in)	7mm (.28in)	30X	14mm (.56in)
	to 2mm (.08in)	to 105X		to 8mm (.34in)	to 26.3X		to 4mm (.16in)	to 52.5X		to 1.3mm (.05in)	to 157.5X		to 1mm (.04in)	to 210X	
20X	12mm (.47in)	20X	76mm (3in)	52mm (2.03in)	5X	266mm (10.5in)	24mm (.94in)	10X	127mm (5in)	7.9mm (.31in)	30X	32mm (1.25in)	6mm (.24in)	40X	14mm (.56in)
	to .8mm (.03in)	to 140X		to 5mm (.29in)	to 35X		to 3.3mm (.13in)	to 70X		to 1mm (.04in)	to 210X		to .8mm (.03in)	to 280X	

Warranty

This product is warranted to be free from defects in material and workmanship for a period of one year from the date of invoice to the original purchaser.

If during the warranty period the product is found to be defective, it will be repaired or replaced at facilities of Bausch & Lomb or elsewhere, all at the option of Bausch & Lomb. However, Bausch & Lomb reserves the right to refund the purchase price if it is unable to provide replacement and repair is not commercially practicable or cannot be timely made. Parts not of Bausch & Lomb manufacture carry only the warranty of their manufacturer. Expendable components such as lamps and fuses carry no warranty.

This warranty does not cover damage caused in transit; damage caused by misuse, neglect, or carelessness; or damage resulting from either improper servicing or modification by other than Bausch & Lomb approved service personnel. Further, this warranty does not cover any routine maintenance work on the product described in its instruction manual or any other minor maintenance work which is reasonably expected to be performed by the purchaser.

No responsibility is assumed for unsatisfactory operating performance due to environmental conditions such as humidity, dust, corrosive chemicals, deposition of oil or other foreign matter, spillage, or other conditions beyond the control of Bausch & Lomb.

For service, repair or return procedures under this warranty, contact your distributor, your local Bausch & Lomb field office or, in the United States, Bausch & Lomb at (716) 338-6513.

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